Working Draft of AICPA Accounting and Valuation Guide

Assets Acquired to Be Used in Research and Development Activities

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Replaces 2001 practice aid *Assets Acquired in a Business Combination to Be Used in Research and Development Activities: A Focus on Software, Electronic Devices & Pharmaceutical Industries*

Prepared by the IPR&D Task Force

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Preface

This guide provides guidance and illustrations for valuation specialists, preparers of financial statements, and independent auditors related to initial and subsequent accounting for, disclosures, and valuation of acquired in-process research and development (IPR&D) assets. This guide is nonauthoritative and has been developed by AICPA staff and the AICPA IPR&D Task Force.

The financial accounting and reporting guidance contained in this guide has been reviewed by the Financial Reporting Executive Committee (FinREC), which is the senior technical body of the AICPA authorized to speak for the AICPA in the areas of financial accounting and reporting.

This guide replaces the 2001 edition of the practice aid *Assets Acquired in a Business Combination to Be Used in Research and Development Activities: A Focus on Software, Electronic Devices & Pharmaceutical Industries.*

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Introduction

.01 Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 805, *Business Combinations*, provides guidance on the accounting and reporting for transactions that represent a business combination or an acquisition by a not-for-profit entity[1] (thereafter collectively referred to as a *business combination*) to be accounted for under the acquisition method. FASB ASC 805-20-25-1 requires that at the acquisition date, the acquirer "recognize, separately from goodwill, the identifiable assets acquired, the liabilities assumed, and any noncontrolling interest in the acquiree."[2] During its deliberations of FASB Statement No. 141(R), *Business Combinations* (codified in FASB ASC 805), FASB concluded that "in-process research and development acquired in a business combination generally will satisfy the definition of an asset…"[3] As such, an acquirer is required to recognize all tangible and intangible assets acquired in a business combination that are to be used in research and development (R&D) activities regardless of whether these assets have an alternative future use by the acquirer. FASB ASC 805-20-30-1 requires that these assets are measured at their acquisition-date fair values. FASB ASC 820, *Fair Value Measurement*, defines *fair value* as the "price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date."

.02 After initial recognition, tangible assets acquired in a business combination that are used in R&D activities are accounted for in accordance with their nature. After initial recognition, intangible assets that are used in R&D activities, including specific *in-process R&D* (IPR&D) *projects* (subsequently referred to as *IPR&D assets*), acquired in a business combination are accounted for in accordance with FASB ASC 350-30. FASB ASC 350-30 requires that these assets be classified as indefinite-lived until the completion or abandonment of the associated

[1] The Financial Accounting Standard Board (FASB) *Accounting Standards Codification* (ASC) glossary defines an *acquisition by a not-for-profit entity* as a transaction or other event in which a not-for-profit acquirer obtains control of one or more nonprofit activities or businesses and initially recognizes their assets and liabilities in the acquirer's financial statements.

It should be noted that certain acquisitions by a not-for-profit entity are not within the scope of FASB ASC 805, *Business Combinations*. Specifically, FASB ASC 805-10-15-4(e) indicates that the guidance in FASB ASC 805 does not apply to a transaction or other event in which a not-for-profit entity obtains control of a not-for-profit entity but does not consolidate that entity, as permitted or required by FASB ASC 958-810-25. FASB ASC 805 also does not apply if a not-for-profit entity that obtained control in a transaction or other event in which consolidation was permitted but not required decides in a subsequent annual reporting period to begin consolidating a controlled entity that it initially chose not to consolidate.

[2] The FASB ASC glossary defines a *business combination* as a "transaction or other event in which an acquirer obtains control of one or more businesses." A *business* is then defined as "an integrated set of activities and assets that is capable of being conducted and managed for the purpose of providing a return in the form of dividends, lower costs, or other economic benefits directly to investors or other owners, members, or participants." Additional implementation guidance regarding what constitutes a business is available in paragraphs 4–9 of FASB ASC 805-10-55.

[3] This is an excerpt from paragraph B152 of FASB Statement No. 141(R), *Business Combinations*. Paragraph B152 of FASB Statement No. 141(R) was not codified in FASB ASC; however, the task force believes that it provides helpful guidance and, therefore, decided to incorporate it in this guide.

R&D efforts,[4] at which time the entity would determine the assets' appropriate useful life. R&D expenditures incurred subsequent to the business combination related to the acquired capitalized IPR&D assets are generally expensed as incurred unless they represent costs of materials, equipment, or facilities that have alternative future uses.

.03 In a business combination, the recognition of assets used in R&D activities can significantly affect the financial reporting of current and future operating results of the reporting entity. Before the effective date of FASB Statement No. 141(R), an acquirer was required to measure and immediately expense tangible and intangible assets acquired to be used in R&D activities (including specific *IPR&D projects*) that had no alternative future use. (However, as discussed in paragraph .08, tangible assets were generally capitalized because they were presumed to have an alternative future use.) This reduced the amount of excess purchase price that would otherwise be recorded as goodwill, as well as decreased net income of the reporting entity in the period following acquisition. Under the current guidance contained in FASB ASC 805, an entity no longer expenses assets to be used in R&D activities that have no alternative future use immediately after the acquisition date, but recognizes them at their acquisition-date fair values.

.04 In a transaction other than a business combination (subsequently referred to as an *asset acquisition*), accounting guidance for assets acquired for use in R&D activities remains unchanged. In accordance with FASB ASC 730-10, such assets are capitalized only if they have alternative future uses; otherwise, such assets are expensed. As a result, assets used in R&D activities acquired in a business combination and those acquired in an asset acquisition are still subject to different accounting treatment. Similar to business combinations, R&D expenditures incurred subsequent to the asset acquisition related to the acquired capitalized IPR&D assets are generally expensed as incurred unless they represent costs of materials, equipment, or facilities that have alternative future uses.

History and Organization of This Guide

.05 Until the early 1990s, amounts allocated to specific IPR&D projects in business combinations were not significant. Later, however, amounts assigned to acquired IPR&D became an increasing portion of the total acquisition price—in some instances more than 75 percent of the total acquisition price. Financial reporting constituents in the software, electronic devices, and pharmaceutical industries expressed concern about (1) the lack of comparability among entities for the definition of what constitutes assets acquired to be used in R&D activities, including specific IPR&D projects; (2) methodologies and assumptions used to value specific assets acquired to be used in R&D activities, including specific IPR&D projects; and (3) level of disclosures provided for amounts allocated to assets acquired to be used in R&D activities, including specific IPR&D projects. In addition, some, including staff of the United States

[4] The requirement to classify in-process research and development (IPR&D) assets acquired in a business combination as indefinite-lived resulted from FASB Statement No. 141R, which superseded FASB Interpretation No. 4, *Applicability of FASB Statement No. 2 to Business Combinations Accounted for by the Purchase Method*, and amended FASB Statements Nos. 2, *Accounting for Research and Development Costs*, and 142, *Goodwill and Other Intangible Assets.* This requirement was subsequently codified in FASB ASC 350-30.

Securities and Exchange Commission (SEC), were concerned about valuations of assets acquired to be used in R&D activities, including specific IPR&D projects, that appeared to be unreasonable determinations of fair value, and some were concerned about the adequacy of procedures employed in audits of financial statements that included a charge for the assets acquired to be used in R&D activities, including specific IPR&D projects. As a result, on September 9, 1998, the chief accountant of the SEC released a letter to the chair of the AICPA SEC Regulations Committee citing a number of issues relating to the valuation of assets acquired in a business combination that the SEC staff noted in its review of public registrant filings.

.06 The AICPA responded to these concerns by forming a task force comprising representatives from various constituencies to study the issues and prepare a best practices publication that would benefit all parties interested in the financial reporting of assets acquired to be used in R&D activities, including specific IPR&D projects, in the software, electronic devices, and pharmaceutical industries (though accounting principles generally accepted in the United States of America [U.S. GAAP] underlying the best practices apply to all industries). The original guidance was published in 2001. It was issued in the form of a practice aid, *Assets Acquired in a Business Combination to Be Used in Research and Development Activities: A Focus on Software, Electronic Devices & Pharmaceutical Industries* (subsequently referred to as *the original practice aid*).

.07 Since the issuance of the original practice aid, there have been significant additions and amendments to U.S. GAAP. This guide has been updated to reflect the latest guidance, including the guidance in FASB Statements No. 157, *Fair Value Measurements* (codified in FASB ASC 820[5]). In the original practice aid, an entire chapter was devoted to the concept of fair value. Since then, FASB has established guidance that defines *fair value* as well as lays out a framework for measuring fair value. This updated guide does, however, provide incremental best practices and examples, as determined by the IPR&D Task Force (task force), related to the valuation techniques and practices used to measure the fair value of IPR&D assets with the focus on the software, electronic devices, and pharmaceutical industries.[6]

.08 This guide has also been updated to reflect the issuance of FASB Statement No. 141(R), which significantly amended the guidance on accounting for a business combination. Specifically, the requirement to capitalize assets acquired in a business combination to be used in R&D activities regardless of whether those assets have an alternative future use had a significant effect on accounting for intangible assets (that is, IPR&D assets), which, under the old guidance, were often expensed due to lack of alternative future use. However, the capitalization requirement did not result in a significant change in practice for tangible assets. This is because

[5] As further discussed in footnote 2 in chapter 6, this guide reflects amendments in Accounting Standards Update (ASU) No. 2011-04, *Fair Value Measurement (Topic 820): Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRSs*.

[6] In this guide, it is commonly presumed that valuation is performed by an external valuation specialist. However, if management has appropriate credentials and experience, they can also serve in the capacity of a valuation specialist. It should also be noted that regardless of whether fair value measurements are developed by management or a third party, management is responsible for the measurements that are used to prepare the financial statements and for underlying assumptions used in developing these measurements.

under the old guidance, these assets were generally presumed to have an alternative future use and, therefore, were usually capitalized. As a result, this guide mostly focuses on intangible assets (that is, IPR&D assets). This guide has also been updated to reflect the guidance of other relevant pronouncements.

.09 The guide provides incremental conclusions about what the task force members perceive as best practices related to initial accounting for (chapters 2 and 3), disclosing (chapter 5), and valuing (chapters 1 and 6) IPR&D assets, including specific IPR&D projects. In addition, this guide discusses best practices with respect to accounting for acquired IPR&D assets subsequent to the acquisition date (chapter 4). Although this subject was not included in the original practice aid, the task force believes that such information is needed due to the requirement to capitalize IPR&D assets acquired in a business combination.

.10 Given different accounting treatment of assets used in R&D activities acquired in a business combination and those acquired in an asset acquisition, this guide also addresses considerations related to assets acquired in an asset acquisition that are to be used in R&D activities (chapter 3).

.11 This guide is based on U.S. GAAP and does not address International Financial Reporting Standards (IFRSs). Although efforts have been made to converge U.S. GAAP and IFRSs in the areas of fair value (FASB ASC 820 and IFRS 13, *Fair Value Measurement*[7]) and business combinations (FASB ASC 805 and IFRS 3 (revised), *Business Combinations*), significant differences still remain in the areas of impairment (FASB ASC 350, *Intangibles—Goodwill and Other* and 360, *Property, Plant, and Equipment*, versus International Accounting Standard (IAS) 36, *Impairment of Assets*) and accounting for IPR&D assets (FASB ASC 350-30 and 730-10 versus IAS 38, *Intangible Assets*).

[7] International Financial Reporting Standard 13, *Fair Value Measurement*, is effective for annual periods beginning on or after January 1, 2013, with earlier application permitted.

Chapter 1

Valuation Techniques Used to Measure Fair Value of In-Process Research and Development Assets

Introduction

1.01 Valuation approaches used to measure the value of an asset may be classified broadly as cost, market, or income.[1] When valuing an asset, each of these approaches should be considered. FASB ASC 820-10-35-24 states that a "reporting entity shall use valuation techniques that are appropriate in the circumstances and for which sufficient data are available to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs."

1.02 Each of the three approaches can be used to measure fair value of an asset acquired in a business combination, asset acquisition, or, subsequently, for impairment testing and measurement purposes. As provided in FASB ASC 820-10-35-24B

> [i]n some cases, a single valuation technique will be appropriate…In other cases, multiple valuation techniques will be appropriate…If multiple valuation techniques are used to measure fair value, the results (that is, respective indications of fair value) shall be evaluated considering the reasonableness of the range of values indicated by those results. A fair value measurement is the point within that range that is most representative of fair value in the circumstances.

1.03 For example, the cost approach is applied only in limited circumstances, such as in the valuation of dedicated, single purpose fixed assets used in research and development (R&D) activities, or in-process R&D (IPR&D) projects that are in initial stages of development in which robust *prospective financial information* (PFI) does not exist. The market approach is seldom used to value IPR&D due to the lack of observable market values for similar assets, except in certain cases in which there may be sufficient observable asset pricing data. In most instances, however, the income approach is used to value assets, particularly intangible assets used in R&D activities, such as specific IPR&D projects.

Cost Approach

1.04 As discussed in paragraphs 3D–3E of FASB ASC 820-10-55, the cost approach reflects the amount that would be required currently to replace the service capacity of an asset (often

[1] Note that while the discussion of the various approaches in this guide are focused only on fair value as defined in Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 820, *Fair Value Measurement*, of in-process research and development (IPR&D) assets for financial reporting purposes, these approaches can, and frequently are, used for other assets or under other valuation premises or standards, for example, fair market value, liquidation value, investment value, and so forth.

referred to as *current replacement cost*). From the perspective of a market participant seller, the price that would be received for the asset is based on the cost to a market participant buyer to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence.

1.05 For assets to be used in R&D activities, including IPR&D projects, there may be little or no relationship between cost and fair value. For example, an R&D project may last for years without producing a commercially viable product, in which case, the reproduction cost may overstate the fair value of the technology. Conversely, a great invention may cost little, in which case, fair value may far exceed cost.

1.06 Because many assets used in R&D activities are unique or proprietary and cannot be reproduced or otherwise replaced, the IPR&D Task Force (task force) believes that the cost approach will generally not be appropriate for valuing assets, such as the intangible portion of an IPR&D project. However, the use of a cost approach may be appropriate in limited circumstances, including the valuation of (1) single purpose fixed assets, (2) assets that can be substituted effectively through replacement or reproduction, or (3) specific IPR&D projects in which the stage of development, while substantive, is so early that reliable information about anticipated future benefits does not exist.

Market Approach

1.07 As discussed in FASB ASC 820-10-55-3A, the market approach uses prices and other relevant information generated by market transactions involving identical or comparable (that is, similar) assets, liabilities, or a group of assets and liabilities, such as a business.

1.08 The prices in recent transactions of comparable technology may be a reasonable basis for estimating the fair value of an early-stage technology. In such circumstances, the *valuation specialist* would study the characteristics of the asset and the stage of its development to ensure that the subject and comparable assets are reasonably similar. However, sales prices of intangible assets are seldom available because intangible assets typically transfer with the sale of a business, not individually. Therefore, the market approach seldom is used to value intangible assets, unless exchanges of individual assets comparable to the subject asset can be observed.

1.09 In some cases, estimates of fair value may be based on the prices of single-technology or single-product companies that are publicly traded. There may also be markets for the purchase of early-stage discoveries from academic institutions or businesses. Markets are evolving for the exchange of intellectual property, and prices from such markets may also be a useful input. These prices may provide indications of fair value for similar early-stage discoveries. Besides market prices for comparable assets, market-derived data can provide inputs to valuing an asset using the income approach, for example, royalty rates derived from licensing arrangements. It should be noted, however, that the terms in these transactions may include an upfront lump-sum payment with certain contingent payments or ongoing royalties based on future success and revenue. Difficulty in converting the transaction terms to either a single lump-sum amount or to a blended effective royalty rate may be an obstacle in benchmarking the value of the subject asset in addition to other issues of comparability.

Income Approach

1.10 As discussed in FASB ASC 820-10-55-3F, the income approach converts future amounts (for example, cash flows or income and expenses) to a single current (that is, discounted) amount. When the income approach is used, the fair value measurement reflects current market expectations about those future amounts.

1.11 The term *income*, as used when referring to techniques under this approach, implies anticipated future benefits (sometimes referred to as *economic earnings* as opposed to the notion of accounting earnings or net income), in the form of *free cash flows* or distributable earnings. Free cash flows differ from reported net earnings in that free cash flows are net of earnings reinvested to fund asset growth or development and adjusted for noncash expenses, such as depreciation and amortization. The income approach involves two basic steps. The first is development of prospective net cash flows[2] expected to accrue to an investor resulting from ownership of an asset or collection of assets. The second step involves discounting the prospective cash flow to a present value.

1.12 The income approach generally may be broken down into two methods:[3] (*a*) single-period capitalization, and (*b*) multiperiod discounted cash flows. The single-period capitalization method is used primarily in the valuation of small businesses, professional practices, certain types of real property, mature companies with steady growth, or stable growth intangible assets that are expected to exist over an indefinite future period. This method is rarely of use in the valuation of assets used in R&D activities because the assumptions of indefinite existence and continuous growth would be inappropriate. The multiperiod discounted cash flow method is the most commonly used income approach to value intangible assets. It requires forecasting cash flows for a discrete period and discounting those amounts to present value at a rate of return that considers the risk of the cash flows. These methods are conceptually the same in that they both convert prospective net cash flows expected to accrue to an investor resulting from ownership of an asset or collection of assets to a present value. The main distinction between these methods is that the single-period capitalization method is mostly used to perform an entity-type valuation, whereas the multiperiod discounted cash flows method, due to its greater flexibility, can address, for example, valuation scenarios with nonconstant growth rates and margins, and, thus, can be used to value a much wider range of subject assets, including entities, segments of entities,

[2] Typically, net cash flows are considered in the income approach and discounted to present value. However, in certain instances and depending on the unit of account determination, certain cash outflows, such as licensing fees or royalties, may need to be presented as a separate liability or contingency. If this is the case, the estimated future gross cash flows will be discounted to their present value to determine the fair value of the asset versus the liability. See the "Questions and Answers—Recognition of IPR&D Assets Acquired in a Business Combination" section in chapter 2 for further discussion.

[3] FASB ASC 820 refers to valuation approaches and valuation techniques. However, Statement on Standards for Valuation Services (SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset*, refers to valuation approaches and methods (not techniques). SSVS No. 1 (which is discussed in chapter 6) defines *valuation method* as "[w]ithin approaches, a specific way to determine value." This definition is consistent with the meaning attributed to valuation techniques in FASB ASC 820. Also, in practice, many valuation techniques are referred to as *methods* (for example, discounted cash flow method, multiperiod excess earnings method, relief from royalty method, greenfield method, real options method, and so forth.) As a result, this guide uses the terms *technique* and *method* interchangeably to refer to a specific way of determining value within an approach.

groups of assets, and individual assets.

1.13 The following are the most commonly used methods and techniques under the income approach to value IPR&D assets:

- Multiperiod excess earnings
- Relief from royalty
- Decision tree analysis
- "Split" methods (that is, revenue, cash flows, or profit split)

1.14 Other methods and techniques under the income approach that might be used to value IPR&D assets are as follows:

- Monte Carlo analysis
- Options-based methods
- Manufacturing cost savings
- Incremental revenue or profit (for example, price premium)
- "With and without" analysis
- Greenfield method

1.15 The stream of cash flows from each of these methods is discounted to present value, including, as appropriate, any tax benefits derived from amortizing the intangible asset for tax purposes,[4] to estimate the fair value of the intangible asset.

1.16 The valuation specialist should apply the income-based method or technique that most accurately captures the benefit of owning the IPR&D asset, given the nature of the asset and availability of required inputs.

1.17 *Multiperiod excess earnings method*. In cases when there is an identifiable stream of prospective cash flows for a collection of assets, a *multiperiod excess earnings method* may provide a reasonable indication of the value of a specific asset. Specifically, under the multiperiod excess earnings method, the estimate of an intangible asset's fair value starts with the PFI associated with a collection of assets rather than a single asset. *Contributory asset charges*, also referred to as *economic rents*, are then deducted from the net (or after-tax) cash

[4] The need to include the benefits of tax amortization will depend on which tax jurisdiction the intangible asset is located, or would be located, from a market participant perspective.

flows for the collection of the associated assets to isolate remaining or "excess earnings" attributable solely to the intangible asset being valued. The contributory asset charge is a deduction for the contribution of supporting assets (for example, net working capital, fixed assets, customer relationships, trade names, and so forth) to the generation of the prospective cash flows. Contributory asset charges should be applied for all assets, including other intangible assets, which would be required by market participants to generate the overall cash flows of the collection of assets. The excess cash flows, net of the charges for contributory assets, are ascribed to the asset being valued and discounted to present value. The multiperiod excess earnings method is discussed in detail in chapter 6.

1.18 *Relief from royalty.* The premise of the *relief from royalty method* is that ownership of the subject asset *relieves* the owner of the need to license the asset from a third party. Thus, by owning the intangible asset, the owner avoids the royalty payments required to license the asset. The relief from royalty is cash flow savings that are discounted to present value. The present value of the prospective after-tax royalty payments approximates the fair value to the investor of owning the intangible asset.

1.19 A relief from royalty method is often appropriate for certain types of intangible assets. For instance, trademarks and trade names, patents, and *developed product technology* are examples of intangible assets that frequently are licensed in exchange for a royalty payment. A critical element of this method is the development of a royalty rate that is comparable to ownership of the specific asset (for example, a rate that equates to worldwide, exclusive rights to use that asset in perpetuity in any manner desired).

1.20 Generally, the relief from royalty method is applied in situations in which

- the importance of the intangible asset to a business or product is similar to that of a comparable, licensed asset (for example, pharmaceutical compounds that are licensed).

- the intangible asset can be reasonably separated from other assets, and it is practical and possible to license it separately.

- the rights of ownership can be compared to the rights under a license (for example, similar geographic market coverage, duration, exclusivity, limitation, technology, and type of customer).

- royalty rates can be observed, including rates for agreements that confirm comparable economic rights for similar intellectual property.

1.21 Typically, the best source of royalty rate information would be other licensing agreements for comparable technologies made by one of the companies in a transaction. When such information is not available, it may be appropriate to use industry average rates or other broad benchmarks with reasonable justification. Royalty rates would also need to consider the qualitative drivers of comparability. Truly comparable rates may be difficult to find for most IPR&D assets and, therefore, simulated or adjusted royalty rates taking into consideration

qualitative value drivers of the subject intangible asset could be used. The relief from royalty method is discussed in detail in chapter 6.

1.22 *Decision tree analysis*. Decision tree analysis is an enhanced income-based method that explicitly captures the expected benefits, costs, and probabilities of contingent outcomes at future decision points, or nodes. In general, these nodes are points at which a major investment decision will be made, such as whether a pharmaceutical company will proceed to a phase III clinical trial. At that point, management can decide whether to make an additional investment based on the benefits and costs expected from that point forward. If the expected present value of the asset at that time is less than the required investment, then the investment is avoided. This is the key difference between decision tree analysis and the previously discussed methods—the ability to analyze future values, change course, and potentially avoid future investment costs that are not expected to produce an adequate return. In contrast, traditional income approach-based methods often assume that such contingencies are resolved favorably and that future development costs are incurred. Methods, such as the multiperiod excess earnings, relief from royalty, and other traditional income-based methods, often attempt to account for the risk of failure in the estimation of the risk-adjusted discount rate. Decision tree analysis is particularly applicable to the valuation of assets subject to "private" (nonmarket) risks, such as the risk that a particular technology will succeed or fail. Risks that are correlated with external markets can be estimated discretely when a decision tree analysis is employed. In summary, the decision tree analysis provides the valuation specialist an ability to analyze costs, risks, and contingent outcomes at various stages.

1.23 An example of a decision tree analysis appears in chapter 6 of this guide. In this example, the market risks are modeled using two potential outcomes—a high market potential and a low market potential. It is important to note that this method will capture the aggregate value of an investment opportunity, including the values of primary and contributory assets. The adjustments required to isolate from the assemblage of assets the values of specific assets, for example, a specific IPR&D asset, are discussed in the example in chapter 6.

1.24 *"Split" methods*. Splitting revenues, cash flows, or profits among assets, or collections of assets, can be a useful technique for isolating cash flows and avoiding double counting when measuring fair value. Such methods may be used to fully isolate the cash flows of a particular asset (for example, a relief from royalty method could be characterized as a form of a "pretax" profit split), or in combination with other methods (such as multiperiod excess earning) to reduce reliance on the calculation of contributory asset charges as a necessary adjustment to avoid double counting.

1.25 *Monte Carlo analysis*. The Monte Carlo technique can be used in the application of income-based methods previously discussed. The term *Monte Carlo* refers to computer generated simulations of numerous PFI scenarios. This type of analysis is consistent with the present value techniques described in paragraphs 4–20 of FASB ASC 820-10-55. The Monte Carlo technique can be used for estimating the fair value of IPR&D assets. Also, many assumptions can be simulated using this technique and incorporated into other valuation methods. The details of the

Monte Carlo technique are beyond the scope of this guide.[5]

1.26 *Options-based methods*. Like decision tree analysis, options-based methods (commonly referred to as *real options* and *real options analysis*) are enhanced income approach-based techniques that capture explicitly the expected benefits, costs, and probabilities of contingent outcomes at future decision points. Again, like decision tree analysis, a real options analysis considers the stages at which an investment decision will be made.

1.27 Real options analysis differs from decision tree analysis in one key respect: "market" risks are addressed inside the model using option pricing concepts. The details of options-based methods are beyond the scope of this guide.[6]

1.28 *Manufacturing cost savings*.[7] An intangible asset may afford its owner a cost savings (that is, a reduced or eliminated cash outflow) over the best alternative to the asset. These cost savings represent the value of ownership of the intangible asset. The present value of the cost savings is fair value of the intangible asset, provided the cost savings would be available to market participants if they owned the intangible asset.

1.29 *Incremental revenue or profit*. For example, an intangible asset may allow for premium pricing (that is, higher cash generation) if it provides utility beyond that of competitive products or services. The premium price is a measure of the benefit derived from ownership of the intangible asset. The present value of incremental cash flows resulting from premium pricing is the fair value of the asset, provided that market participants would also be able to take advantage of premium pricing if they owned the intangible asset.

1.30 *"With and without" analysis:* Fair value of some assets may best be measured by the lost

[5] The nature of Monte Carlo analysis theoretically would lend itself well to the valuation of in-process research and development (IPR&D) assets. However, the task force observes that, as of the writing of this guide, this methodology was not commonly used in practice to value IPR&D assets. The task force has observed, however, the use of this methodology in the valuation of contingent consideration under FASB ASC 805, *Business Combinations*. For information on the Monte Carlo and other numerical simulation and scenario analysis techniques, readers may refer to Johnathan Mun, *Modeling Risk: Applying Monte Carlo Risk Simulation, Strategic Real Options, Stochastic Forecasting, and Portfolio Optimization* (Hoboken, New Jersey: John Wiley & Sons, Inc., 2010). Less technical discussions scenario valuation approaches can be found in Francis Clauss, *Corporate Financial Analysis with Microsoft Excel* (McGraw-Hill Companies, 2010); and Tim Koller, Marc Goedhart, and David Wessels, *Valuation: Measuring and Managing the Value of Companies* (Hoboken, New Jersey: John Wiley & Sons, Inc., 2010).

[6] The task force cannot point to any specific examples of using real options analysis for the valuation of IPR&D assets in financial reporting, even though the nature of this methodology also theoretically would lend itself well to the valuation of IPR&D assets. For information on the real options method, readers may refer to the AICPA Guide *Valuation of Privately-Held-Company Equity Securities Issued as Compensation* (see appendix G, "Real Options"); Thomas E. Copeland and Vladimir Antikarov, *Real Options, Revised Edition: A Practitioner's Guide* (London, UK: Texere, 2003); Martha Amram and Nalin Kulatilaka, *Real Options: Managing Strategic Investment in an Uncertain World* (Boston: Harvard University Press, 1999); and Jonathan Mun, *Real Options Analysis: Tools and Techniques for Valuing Strategic Investments and Decisions* (Hoboken, New Jersey: John Wiley & Sons, Inc., 2002); Timothy Luehrman, *Investment Opportunities as Real Options: Getting Started on the Numbers* (*Harvard Business Review*, July 1998).

[7] Manufacturing costs savings is a part of the broader cost savings method. However, the task force believes that R&D activities would be mainly focused on applying technology to saving costs in the manufacturing process.

profits associated with the period of time necessary to recreate the assets. The method involves a comparison of the fair value of the entity as if the asset were in place to the fair value of the entity as if the asset were to be recreated "from scratch."

1.31 *Greenfield method.* This direct value method lends itself to valuing key assets in certain industries (such as broadcast, wireless, and cable industries), as discussed in FASB ASC 805-20-S99-3. Conceptually, the Greenfield method and multiperiod excess earnings method accomplish the same objective. The key methodological difference is that the Greenfield method deducts the contribution of other assets upfront, whereas the multiperiod excess earnings method deducts the contribution of other assets over time. The Greenfield method is not commonly used to value IPR&D assets.

Chapter 2

Definition of and Accounting for Assets Acquired in a Business Combination That Are to Be Used in Research and Development Activities

Introduction

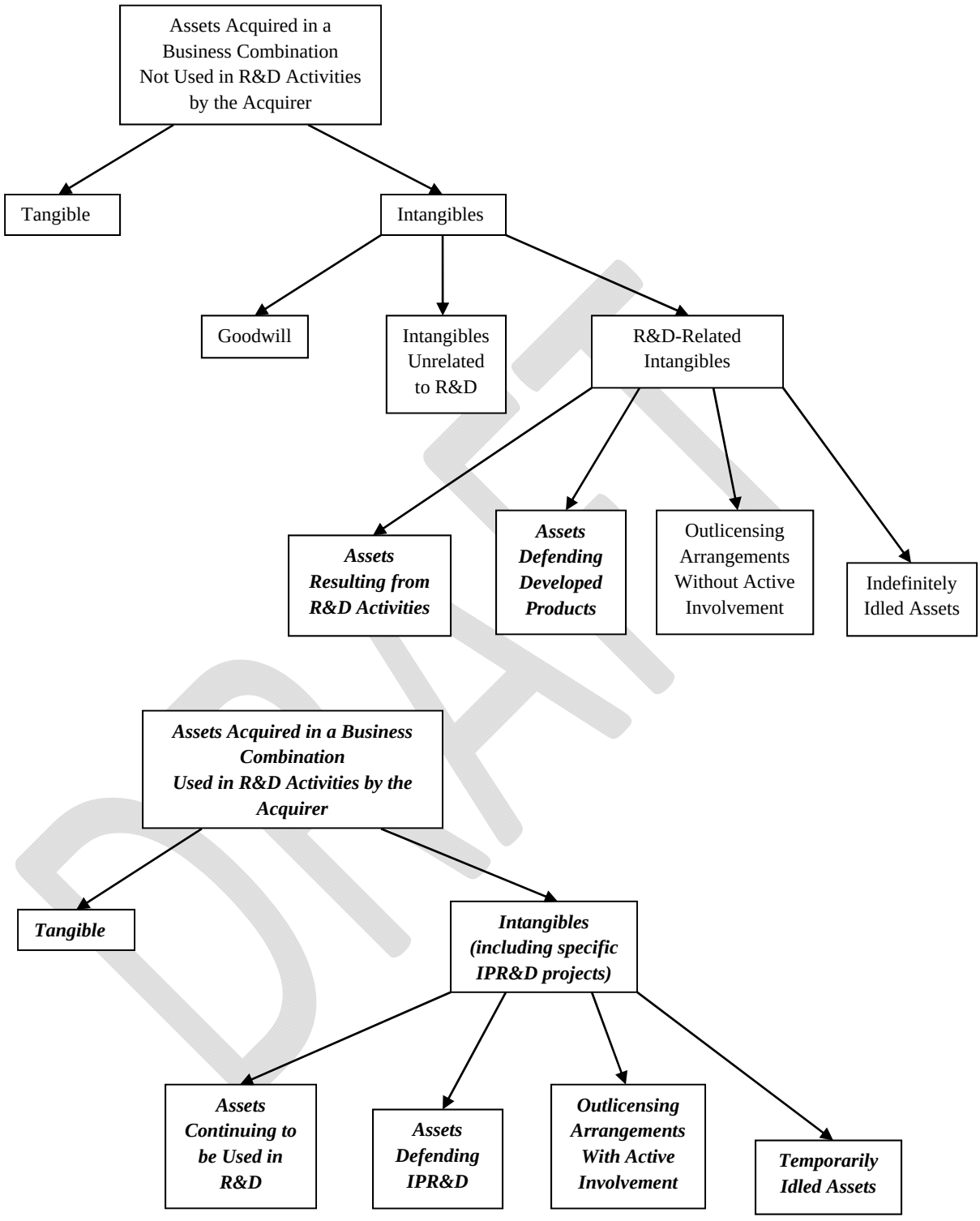
2.01 This chapter sets forth what the IPR&D Task Force (task force) believes are best practices in defining assets acquired in a business combination that are to be used in research and development (R&D) activities, including specific in-process R&D (IPR&D) projects, for purposes of applying Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 805, *Business Combinations*. The task force notes that business combinations involving the software, electronic devices, and pharmaceutical industries have traditionally exhibited the greatest proportional amount (in terms of total value) of assets acquired to be used in R&D activities. Accordingly, this guide focuses on those industries.

2.02 This chapter's "Introduction" and "Key Concepts" sections are supplemented by the "Explanatory Comments" section, which expands on the discussion and sets forth the task force's support for the determination of best practices. In addition, this chapter includes questions and the task force's answers, which are intended to aid in the application of the best practices.

2.03 In this guide, an R&D project that has not yet been completed is referred to as an *IPR&D project*. Intangible assets that are to be used or are used in R&D activities, including specific IPR&D projects, are referred to as *IPR&D assets*. In other words, an IPR&D project is an example of an IPR&D asset. However, in some cases, an IPR&D project may comprise several IPR&D assets. In this chapter, unless indicated otherwise, the term *IPR&D asset* refers to an IPR&D asset acquired in a business combination.

2.04 FASB ASC 730-10 excludes from its scope assets acquired in a business combination that are to be used in R&D activities. However, it sets forth broad guidelines regarding what constitutes R&D activities. FASB ASC 805-20 requires that an acquirer recognize and measure at fair value, separately from goodwill, the identifiable assets acquired in a business combination. Identifiable assets acquired that are to be used in R&D activities are separately recognized and measured at fair value regardless of whether those assets have an alternative future use. Separately identifiable assets include both tangible and intangible assets, including intangible assets representing specific IPR&D projects to be pursued by the reporting entity. The task force believes that acquired IPR&D projects must have been the result of R&D activities undertaken by the acquired business, the costs of which qualified as R&D costs under FASB ASC 730-10.

2.05 The following diagram illustrates an overall description of assets acquired in a business combination. This guide provides guidance on the assets that are *italicized* and in **bold type**. See the "Used in R&D Activities Criteria" section for further discussion.


Assets Acquired in a Business Combination Not Used in R&D Activities by the Acquirer
Tangible
Intangibles
Goodwill
Intangibles Unrelated to R&D
R&D-Related Intangibles
Assets Resulting from R&D Activities
Assets Defending Developed Products
Outlicensing Arrangements Without Active Involvement
Indefinitely Idled Assets
Assets Acquired in a Business Combination Used in R&D Activities by the Acquirer
Tangible
Intangibles (including specific IPR&D projects)
Assets Continuing to be Used in R&D
Assets Defending IPR&D
Outlicensing Arrangements With Active Involvement
Temporarily Idled Assets

Key Concepts

Recognition of Assets Acquired in a Business Combination

Asset Recognition Criteria

2.06 Based on guidance in paragraphs 1–3 of FASB ASC 805-20-25, to qualify for recognition as part of applying the acquisition method

- assets acquired (and liabilities assumed) in a business combination must meet the definition of an *asset* (and *liability*) in FASB Concepts Statement No. 6, *Elements of Financial Statements*,[1] at the acquisition date.

- assets acquired (and liabilities assumed) must be part of what the acquirer and the acquiree (or its former owners) exchanged in the business combination transaction rather than the result of separate transactions. (Refer to paragraphs 20–22 of FASB ASC 805-10-25 for additional guidance.)[2]

- an asset must be identifiable.

2.07 According to the FASB ASC glossary, an asset is *identifiable* if it meets either of the following criteria:

a. It is separable, that is, capable of being separated or divided from the entity and sold, transferred, licensed, rented, or exchanged, either individually or together with a related contract, identifiable asset, or liability, regardless of whether the entity intends to do so.

b. It arises from contractual or other legal rights, regardless of whether those rights are transferable or separable from the entity or from other rights and obligations.

Used in R&D Activities Criteria

2.08 The task force believes that an asset acquired in a business combination that is to be "used in R&D activities" by the acquirer is distinguishable from other acquired assets because the acquirer has specifically identified an IPR&D project that is expected to incur R&D costs within the scope of FASB ASC 730-10 that will use the acquired asset. Although the use of the

[1] It should be noted that the Financial Accounting Standards Board (FASB) Concepts Statements were not codified and do not represent authoritative accounting principles generally accepted in the United States of America (U.S. GAAP). The FASB Concepts Statements are available at www.fasb.org/jsp/FASB/Page/SectionPage&cid=1176156317989.

[2] When evaluating whether an individual transaction is a part of a business combination, it may also be helpful to consider guidance in FASB *Accounting Standards Codification* (ASC) 810-10-40-6. This paragraph discusses whether multiple arrangements should be accounted for as a single transaction as it relates to a parent ceasing to have a controlling financial interest in a subsidiary.

asset need not necessarily be limited to identified IPR&D projects, its use in, or contribution to, identified R&D projects should be more than minor. The exclusion of an IPR&D project from future spending plans for R&D or internal lists of projects on which the company is actively working are examples of factors that may indicate that a company is not planning to use the acquired intangible asset in R&D activities.

2.09 The task force observed that it would not be appropriate to characterize goodwill (or elements of acquired value ascribed to goodwill) as "assets used in R&D activities."

2.10 The task force has considered the following categories of intangible assets acquired in a business combination in connection with the "used in R&D activities" criteria:

- *R&D efforts of acquiree to be continued by the acquirer.* These assets represent R&D acquired in a business combination that will continue to be actively pursued by the acquirer in its ongoing R&D activities. Such assets would clearly be considered "used in R&D activities."

- *Defensive.* If the reporting entity intends to hold (or lock up) an acquired intangible asset to prevent others from obtaining access to the asset so as to "defend" the value of other intangible assets used in R&D activities, the task force believes that such asset would be considered "used in R&D activities." This is because such asset will be used in R&D activities indirectly by defending assets that the reporting entity utilizes in its R&D activities.

  However, if an acquired intangible asset will be defending a developed product, the task force believes that such asset would not be considered "used in R&D activities" because it will not be associated with R&D. (See the "Defensive IPR&D Assets" section in this chapter for further discussion of defensive assets.)

- *Outlicensed*. If the reporting entity intends to outlicense an acquired intangible asset (or acquires an already outlicensed intangible asset) but plans to play an active role in the development of the outlicensed asset (for example, under a *collaborative arrangement* with another party), the task force believes that such asset would be considered "used in R&D activities." This is because the reporting entity will use the acquired asset in its R&D activities jointly with another party.

  However, the task force believes that if the reporting entity intends to outlicense an acquired intangible asset and does not plan to be actively involved in its development, then such asset would not be considered "used in R&D activities." If such *outlicensing arrangement* was in place at the time of business combination, the outlicensed asset would not be considered "used in R&D activities;" it would be considered a contract-based intangible asset provided it meets the recognition criteria described in the "Asset Recognition Criteria" section of this chapter. (See the "Outlicensing Arrangements" section in chapter 4 for further discussion of these arrangements.)

- *Idled*. Even though both idled and defensive assets are not actively used by the reporting entity, idled assets are different from defensive assets. The difference between these two asset categories is the value, or lack thereof, resulting from the reporting entity's decision not to actively use the asset. Although the reporting entity derives value from defensive assets because they "defend" the value of its other assets, idled assets do not contribute to an increase (or maintenance) in the value of the reporting entity's other assets.

  Although FASB ASC 360, *Property, Plant, and Equipment*, is applicable to long-lived assets, the task force believes that it may be helpful to consider this guidance when assessing whether an acquired intangible asset will be used in R&D activities. With respect to acquired intangible assets that the reporting entity plans to idle indefinitely, the task force believes that such assets would not be considered "used in R&D activities." The task force believes that this view is consistent with guidance on long-lived assets in FASB ASC 360-10-35-47, which states that "a long-lived asset to be abandoned is disposed of when it ceases to be used."

  With respect to assets that the reporting entity plans to temporarily idle, the task force believes that such assets could be considered "used in R&D activities." Furthermore, the task force believes that this view is supportable by guidance in FASB ASC 350-30-35-17A, which states that "[c]onsistent with the guidance in paragraph 360-10-35-49, intangible assets acquired in business combination that have been temporarily idled shall not be accounted for as if abandoned."

R&D–Related Intangibles Not Used in R&D Activities

2.11 Acquired intangible assets that will not be "used in R&D activities" by the acquirer are not subject to guidance in FASB ASC 350-30-35-17A, which provides that intangible assets acquired in a business combination that are used in R&D activities (regardless of whether they have an alternative future use) are capitalized and classified as indefinite-lived until the completion or abandonment of the associated R&D efforts. Such assets should be accounted for in accordance with other applicable accounting principles generally accepted in the United States of America (U.S. GAAP). These assets would first need to be evaluated against the recognition criteria described in the "Asset Recognition Criteria" section of this chapter. For those assets that meet the recognition criteria, the reporting entity would need to determine their useful life in accordance with guidance in paragraphs 1–5 of FASB ASC 350-30-35. Please refer to FASB ASC 350-30 for further guidance because such assets are outside of the scope of this guide.

2.12 Once R&D activities produce an asset that is complete (for example, a software program released for sale), such asset represents an *asset resulting from R&D activities*. Once an IPR&D project has been completed, it also represents an asset resulting from R&D activities. An asset resulting from R&D activities can potentially be used in R&D activities in other ways, but the asset itself is complete, and there is no more substantive work to be performed to finish it.

2.13 In a business combination, it is important to distinguish acquired intangible assets *used in* R&D activities (that is, IPR&D assets) from acquired intangible assets *resulting from* R&D

activities because assets resulting from R&D activities are generally evaluated as acquired intangible assets that, unlike IPR&D assets acquired in a business combination, are not defined by the authoritative literature to have an indefinite life. (See the "Determining the Useful Life of an IPR&D Asset" section for further discussion.)

Questions and Answers—Recognition of IPR&D Assets Acquired in a Business Combination

2.14 *Question 1*: Company A acquired Company X in a business combination. Prior to the date of the acquisition, Company X had entered into a licensing arrangement with Company L. Pursuant to the terms of the license, Company X acquired the worldwide exclusive right to develop, make, distribute, and sell a drug candidate that had been patented by Company L. The term of the license is equal to the expected life of the patent of the drug candidate and includes a right to sublicense the drug candidate. At the time of Company X's license, the drug candidate was in phase I clinical trials (that is, not yet approved for marketing). In exchange for these rights, Company X made a payment at the inception of the agreement and is obligated to make additional payments if certain substantive milestones are achieved (for example, initiation of phase III clinical trials), as well as royalties based on a percentage of sales of the drug if it is approved for marketing. Assuming Company A will continue pursuing this project, do the contractual rights to the drug candidate qualify for recognition as an IPR&D asset?

Answer: Yes. The licensed rights to the drug candidate meet both of the criteria for being identifiable: they arise from contractual rights, and they are separable. FASB ASC 805-20-55-31 specifically lists licensing agreements as an example of a contract-based intangible. Further, FASB concluded in FASB Statement No. 141(R), *Business Combinations* (which was subsequently codified in FASB ASC 805), that "in-process research and development acquired in a business combination generally will satisfy the definition of an asset because the observable exchange at the acquisition date provides evidence that the parties to the exchange expect future economic benefits to result from that research and development."[3] Based on this conclusion, the task force believes that the rights to the drug candidate would meet the definition of an asset. Because Company A will continue R&D activities associated with this asset, the contractual rights to the drug candidate would qualify for recognition as an IPR&D asset.

Based upon the facts presented in this example, the task force believes that the licensed rights are most akin to having purchased the asset. However, in other situations, the licensed rights may be more limited, and the transaction would not be viewed as being equivalent to a purchase. The task force believes that each transaction should be evaluated based on its specific facts and circumstances to determine the appropriate accounting treatment.

2.15 *Question 2*: Assuming the same fact pattern as in question 1, should the milestone and royalty payments be considered elements of the acquired contract-based intangible or a separate unit of account?

[3] This explanation is provided in paragraph B152 of FASB Statement No. 141(R), *Business Combinations*. Paragraph B152 of FASB Statement No. 141(R) was not codified in the FASB ASC; however, the task force believes that it provides helpful guidance and, therefore, decided to incorporate it in this guide.

Answer: The milestone and royalty obligations are elements of the acquired contract-based intangible rather than a separate unit of account. In determining the fair value of this contract-based intangible asset, Company A will most likely use an income approach, such as a discounted cash flow method, that will consider all the anticipated cash flows associated with this contract that a market participant would consider. Accordingly, in addition to the anticipated development costs, revenues, cost of product, commercialization costs, and other cash flows, Company A would also consider the anticipated milestones and royalties and, if necessary, would adjust the cash flows to reflect market participant assumptions. The milestone and royalty obligations would, therefore, reduce the fair value of the licensed IPR&D asset. If a liability or a contra asset is required to be recognized separately under U.S. GAAP that relates to these payments (for example, if instead of being terms of a licensing transaction, the milestones and royalties had been contingent consideration in a previous business combination resulting in the establishment of a liability at fair value for the contingent consideration), then these payments should not be included in the discounted cash flow analysis to avoid double-counting.

Attributes of an Acquired IPR&D Project

2.16 As discussed in the answer to question 1 in paragraph 2.14, FASB concluded in FASB Statement No. 141(R) that an acquired IPR&D project will generally satisfy the definition of an *asset* because the observable exchange at the acquisition date provides evidence that the parties to the exchange expect future economic benefits to result from that R&D. Additionally, the task force believes that an acquired IPR&D project will commonly be identifiable.

2.17 In addition to satisfying the general recognition criteria applicable to each asset acquired in a business combination that is to be used in R&D activities, if the asset to be used in R&D activities is a specific IPR&D project, the task force believes that there should also be persuasive evidence that each of the acquired IPR&D projects have substance and be incomplete.

- *Substance*—For a specific IPR&D project of an acquired company to give rise initially to an asset, the acquired company must have performed R&D activities that constitute more than insignificant efforts and that (*a*) meet the definition of R&D under FASB ASC 730-10, and (*b*) result in the creation of value.

- *Incompleteness*—Incompleteness means there are remaining risks (for example, technological or engineering) or certain remaining regulatory approvals at the date of acquisition. Overcoming those risks or obtaining the approvals requires that additional R&D costs be incurred.

Unit of Account

2.18 The task force discussed at length the manner in which assets acquired in a business combination that are to be used in R&D activities are to be recognized, that is, how the unit of account to record those assets is to be determined. The task force does not believe that it would be appropriate to combine into a single unit of account tangible assets used in R&D activities with intangible assets used in R&D activities. Similarly, the task force does not believe that it would be appropriate to combine into a single unit of account a material finite-lived intangible

asset and a material indefinite-lived intangible asset. As a result, the task force's views expressed in this section are limited to intangible assets acquired in a business combination that are to be used in R&D activities (that is, IPR&D assets) and whether it is appropriate to combine such assets into a single unit of account.

2.19 Although not referenced explicitly in FASB ASC 805, consistent with the manner in which other identifiable intangible assets are recognized, the task force believes that the definition of *identifiable* in the FASB ASC glossary should be considered when determining the unit of account for IPR&D assets. However, the task force believes that the application of the concept of identifiable should not result in a unit of account that is so disaggregated that the cost of recognizing, measuring, and maintaining assets at that level exceeds the benefits of such a disaggregated unit of account.

2.20 In practice, separately identifiable IPR&D assets are sometimes aggregated into a single unit of account whenever the separately identifiable assets are substantially the same. The determination of unit of account will depend on the relevant facts and circumstances of each acquisition. When making that determination, the task force believes that it may be helpful to consider the factors listed subsequently. None of those factors are individually determinative. The following list is not meant to be all inclusive; there may be other factors to consider:

- The phase of development of the related IPR&D project (see the "Specific IPR&D Projects—Life Cycle" section of this chapter for further discussion on phases of development)
- The nature of the activities and costs necessary to further develop the related IPR&D project
- The risks associated with the further development of the related IPR&D project
- The amount and timing of benefits expected to be derived in the future from the developed asset(s)
- The expected economic life of the developed asset(s)
- Whether there is an intent to manage advertising and selling costs for the developed asset(s) separately or on a combined basis
- Whether the asset, whether an incomplete IPR&D project or when ultimately completed, would be transferred by itself or with other separately identifiable assets

The task force notes that determining the appropriate unit of account requires considerable judgment.

Questions and Answers—Determining the Unit of Account

2.21 *Question 1*: Company A acquired Company X in a business combination. At the acquisition date, Company X was pursuing completion of an IPR&D project that, if successful, would result in a drug for which Company A would seek regulatory approval in the United States, Europe, and Japan. What is the appropriate unit of account for this IPR&D project?

Answer: It depends. With specific regard to the acquired incomplete IPR&D project, the task force believes that the decision to recognize one IPR&D asset (representing the compound) or three IPR&D assets (representing the compound in each of the jurisdictions the compound is expected to be sold in) requires considerable judgment because it is likely "separable" as a "global" or "jurisdictional" asset. As indicated previously, the determination of unit of account will depend on the relevant facts and circumstances of each acquisition and, more specifically, the evaluation of factors identified previously.

The following factors indicate that the recording of a single (global) IPR&D asset may be appropriate:

- The IPR&D project is still in an early phase of development at which point it may be less likely to have separate units of account for different jurisdictions than in later phases of development.

- The nature of the activities and costs necessary to further develop the IPR&D project are substantially the same (for example, the development of the project will occur centrally, and Company A only intends to incur a small portion of the total development costs to obtain approval within each regulatory jurisdiction towards the later stages of testing).

- Based on historical experience (or expectations), the risks associated with the further development of the IPR&D project are substantially the same (for example, Company A believes it will likely result in approval in all three jurisdictions or none of the jurisdictions, although the timing of approval may differ).

- The amount and timing of benefits expected to be derived in the future from the developed asset(s) and the expected economic life of the developed assets are substantially the same (for example, if approved, the patent is expected to have approximately the same life in all three jurisdictions).

- Company A intends to manage advertising and selling costs from the perspective of the global brand, not the individual jurisdictions where the product will be sold.

- Based on historical experience and current intentions, once completed, the compound (if ever transferred) would be transferred in one worldwide arrangement.

The following factors indicate that the recording of three separate "jurisdictional" IPR&D assets could be appropriate:[4]

- The IPR&D project is in a later phase of development, and development risks associated with different jurisdictions are known.

- The nature of the activities and costs necessary to further develop the IPR&D project are not substantially the same. For example, the development of the project will occur centrally for a portion of the process; however, the extent of separate regulatory approval costs is expected to be a significant portion of the overall development cost.

- The risks associated with the further development of the IPR&D project are not substantially the same. For example, Company A believes the risks of obtaining approval in each jurisdiction is different, and they do not believe approval in one jurisdiction has relevance to other jurisdictions.

- The amount and timing of benefits expected to be derived in the future from the developed asset(s) and the expected economic life of the developed asset(s) are not substantially the same. For example, if approved, the patent life is expected to be different for each of the three jurisdictions.

- Company A intends to manage advertising and selling costs separately in each jurisdiction the compound is sold in.

- Based on historical experience and current intentions, once completed, the compound (if ever transferred) would not be transferred as a single asset.

The task force noted that depending on the results of management's analysis, there may be situations when further disaggregation[5] is appropriate (such as geographic). However, the task force does not believe that a unit of account that is aggregated beyond the individual project (compound) level would be appropriate.

2.22 *Question 2*: Assume the same facts as in the preceding question 1, except that the project has received regulatory approval in the United States but not in Japan and Europe. How many assets (units of account) should Company A recognize relative to the acquired IPR&D project?

Answer: With specific regard to the incomplete IPR&D project, one *indefinite-lived IPR&D asset* may be recognized, which would represent the IPR&D project related to the compound that may be approved in Japan and Europe.

[4] Although in this example the unit of account determination is based on different geographic locations, the same logic can be applied to different drug indications (for example, physical ailment, disease state, treatment regime.)

[5] However, it should be noted that there are certain valuation implications associated with disaggregated unit of account. See footnote 6 in paragraph 6.52 in this guide for further discussion.

It may also be appropriate to record two indefinite-lived IPR&D assets in this example. Each asset would represent the IPR&D project related to the compound that may be approved in each of the two remaining jurisdictions: Japan and Europe.

However, if Company A views the global compound as a single unit of account and it expects to earn in the United States a significant portion of total revenue or cash flows expected to be generated by that compound, it may conclude that it did not acquire an incomplete IPR&D project because the project has received regulatory approval in the United States. In this case, Company A would recognize an asset resulting from R&D activities and determine its useful life in accordance with guidance in paragraphs 1–5 of FASB ASC 350-30-35. It should be noted that under the "global compound" view, the task force believes that Company A acquired a single finite-lived intangible asset (that is, an asset resulting from R&D activities) as opposed to a combination of a finite-lived intangible asset (completed IPR&D project in the United States) and indefinite-lived intangible asset(s) (incomplete IPR&D projects in Japan in Europe.) Please refer to the "Completion and Readiness for Its Intended Use" section of chapter 4 for further guidance.

2.23 *Question* 3: In a business combination, Company A acquired the worldwide exploitation rights to Web-based access technology. The rights supported an existing specific IPR&D project to develop a product for exploitation in the United States. Company A does not have the resources to exploit the potential product in foreign countries and, therefore, it reasonably expects that it will license the exclusive rights to exploitation in countries outside the United States. How should the non-U.S. rights be recognized?

Answer: The expected sale of the non-U.S. rights is an intangible asset that is identifiable and should be recognized because it meets the separability criteria in FASB ASC 805. However, this intangible asset would not meet the "used in R&D activities" criteria (discussed in the "Used in R&D Activities Criteria" section of this chapter) because Company A plans to outlicense it and does not plan to be actively involved in its development. As a result, this intangible asset would not represent an IPR&D asset. Whether this intangible asset should be recognized as one asset (all non-U.S. jurisdictions) or as more than one asset may, in large measure, depend on how Company A expects to transfer that asset. Assuming that the licensing arrangement will be treated as a sale for accounting purposes, it may also be appropriate for Company A to account for the asset(s) expected to be licensed as "held for sale" asset(s) as discussed further in the "Assets Held for Sale" section of this chapter. The specific IPR&D project with respect to the development of a product for the U.S. market would be accounted for as an IPR&D asset in accordance with the best practices described herein.

2.24 *Question 4*: Company A acquired Company X in a business combination. At the acquisition date, Company X was pursuing completion of two IPR&D projects. One of the projects relates to the potential development of software improvements to the service delivery engine, which allows telecommunication companies the ability to provide services to mobile device subscribers. The other IPR&D project relates to the potential development of software that adds incremental features to mobile devices. Given the specific needs of telecommunication companies with respect to software to deliver their services to subscribers, the IPR&D project related to the service delivery engine is considered riskier and more time consuming than the

development of software that adds incremental features to mobile devices. In addition, the expected life of the potential software improvements to the service delivery engine is expected to be at least twice the expected life of the potential software that adds incremental features to mobile devices. How many IPR&D assets (units of account) should Company A recognize relative to the two acquired IPR&D projects?

Answer: Given this fact pattern, two separate IPR&D assets would be recognized because it would be difficult to argue that the IPR&D projects are substantially the same. One of the IPR&D projects is considered riskier and more time consuming than the other, and the expected life of the potential software from each of the projects differs.

Core Technology

2.25 In light of the revised guidance under which identifiable intangible assets acquired in a business combination that are to be used in R&D activities are no longer charged to expense at acquisition and are generally assigned an indefinite life at the time of the acquisition (see the "Determining the Useful Life of an IPR&D Asset" section for further discussion), the task force reconsidered the definition of *core* (or *base*) *technology* as contained in the original practice aid. The original practice aid defined *core* (or *base*) *technology* as "[t]hose technical processes, intellectual property, and the institutional understanding that exist within an organization with respect to products or processes that have been completed and that will aid in the development of future products, services, or processes that will be designed in a manner to incorporate similar technologies." The task force believes that the central element of that definition of *core technology* is that it represents "technical processes, intellectual property, and the institutional understanding that exist within an organization . . ." The task force also believes that "technical processes, intellectual property, [and] institutional understanding"[6] each generally meet the criteria of FASB ASC 805 for separate recognition. As a result, the task force believes that it is no longer necessary to recommend that core (or base) technology be separately recognized as an intangible asset.

2.26 So long as acquired "technical processes, intellectual property, [and] institutional understanding" are recognized and measured in accordance with FASB ASC 805, the task force believes that going forward, for new transactions, there should be no additional intangible assets (value) that would otherwise have been attributed to "core technology" to recognize and measure. The task force does not necessarily believe that value historically attributed to "core technology" should be allocated to acquired IPR&D projects only (or any other specific identifiable intangible asset). Rather, entities should perform an asset identification process by applying the recognition and measurement criteria in FASB ASC 805, as described previously. As a result, the task force believes that going forward, as it applies to new transactions, the value historically attributed to "core technology" will be allocated to other identifiable intangible assets, including possibly IPR&D assets. The task force's current recommendations are intended to reflect the developments in the accounting standards, which resulted in an improved

[6] Although institutional understanding is not generally recognized as an asset on an entity's balance sheet, it would be reflected in items, such as unpatented processes and "know-how," that would typically meet FASB ASC 805, *Business Combinations*, requirements for separate recognition.

understanding of asset identification and valuation.

2.27 The task force acknowledges that practice generally recognized core or base technology in periods prior to the effective date of FASB Statement No. 141(R). With respect to such past transactions, the task force does not believe that it would be appropriate to reallocate value previously assigned to core (or base) technology to other identifiable intangible assets. Rather, the task force believes that the existing core (or base) technology assets should continue to be evaluated for impairment in accordance with the applicable guidance. The task force observes that, in practice, core (or base) technology assets had generally been determined to have a finite useful life and, as such, they would be evaluated for impairment in accordance with FASB ASC 360-10. Furthermore, in situations in which an entity has to perform step 2 of the goodwill impairment test, which involves valuing all the assets and liabilities of that reporting unit (including any unrecognized intangible assets) as if the reporting unit had been acquired in a business combination, no value would be assigned to core technology. Instead, the entity would assign value to other intangible assets that would additionally encompass the value previously recognized as core technology.

Questions and Answers—Core Technology

2.28 *Question 1*: Company A acquired Company X in a business combination. At the acquisition date, Company X was selling engineering-design software as "Version 5." In addition to the completed Version 5, Company X was actively developing significant improvements to Version 5 that they expected to include and sell as "Version 6." Further, although not under development, Company X had identified further enhancements that were expected to be included in "Version 7." Should Company A separately recognize a "core (or base) technology" asset for the technology present in Version 5 that will serve as a base or foundation for subsequent versions of the software?

Answer: No. The task force believes that the technology present in Version 5 that will serve as a base or foundation for subsequent versions of the software would demonstrate *technology migration*, which would be recognized as part of Version 5 existing technology (for further information on technology migration, see paragraph 6.57 in chapter 6). As a result, Company A would not recognize a "core (or base) technology" asset. It would, however, recognize an asset (or assets) for Version 5 and an IPR&D asset related to the current state of development of new technology to be included in Version 6; no asset would be recognized for Version 7 due to a lack of substance.

2.29 *Question 2*: Company A acquired Company X, which had developed a delivery mechanism for the delivery of Drug 1 and Drug 2. The delivery mechanism has been approved by the U.S. Food and Drug Administration (FDA) for the delivery of Drug 1, and Company X has been selling that product for 2 years. In addition, Company X has commenced clinical trials for delivery of Drug 2 via delivery mechanism in anticipation of applying to the FDA for approval for such use. It is expected that significant R&D costs will be incurred to customize the delivery mechanism technology to accommodate the unique characteristics of Drug 2 before obtaining FDA approval for delivery of Drug 2. Those actions are underway and are approximately 50 percent complete, but the FDA has not approved delivery of Drug 2. Do the

technological processes and institutional knowledge represented by the delivery mechanism used for the delivery of Drug 1 represent base (or core) technology?

Answer: No. The characteristics of Drugs 1 and 2 are different, and the design of a delivery mechanism for each drug must reflect those different characteristics. Therefore, the delivery mechanism for Drug 2 will not use the design of the delivery mechanism for Drug 1 as it existed at the transaction date. However, the task force believes that the technological processes and institutional knowledge represented by the delivery mechanism used for the delivery of Drug 1 that currently is marketed would represent *enabling technology* because this technology is shared between Drugs 1 and 2 and potentially other future drug indications. Although in this fact pattern, the value of enabling technology would be subsumed into other asset categories (including the developed technology surrounding Drug 1 and IPR&D technology surrounding Drug 2), there may be situations when enabling technology would qualify for separate recognition. (For an example of a situation where enabling technology would be recognized as a separate asset see paragraph 6.55 in chapter 6. For further information on enabling technology see paragraphs 6.53–6.56 in chapter 6.)

Assets Held for Sale

2.30 As described in FASB ASC 360-10-45-12, an acquirer of a long-lived asset (or disposal group) may account for that asset (or disposal group) as "held for sale" if it is probable that the criteria in FASB ASC 360-10-45-9 will be met shortly after acquisition. A long-lived asset (or disposal group) that is newly acquired and classified as held for sale is measured at fair value less cost to sell at the acquisition date. As a consequence, it is an exception to general measurement principles within FASB ASC 805. However, as indicated in FASB ASC 820-10-15-1, measurements based on fair value, such as fair value less cost to sell, are within the scope of FASB ASC 820, *Fair Value Measurement*, and, therefore, subject to its measurement and disclosure requirements. It may be acceptable to account for an indefinite-lived intangible asset as "held for sale" so long as the criteria in FASB ASC 360-10-45-9 are satisfied.

2.31 Assets acquired in a business combination that have been temporarily idled should not be accounted for as if abandoned.

Defensive IPR&D Assets

2.32 Sometimes an entity will acquire in a business combination an IPR&D asset that the acquirer intends to hold (or lock up) to prevent others from obtaining access to the asset in order to "defend" the value of other IPR&D assets or developed products.

2.33 Intangible assets that the acquirer does not intend to actively use but intends to hold (or lock up) to prevent others from obtaining access to the asset are generally described as being "defensive intangible assets," the accounting for which is prescribed by paragraphs 5A–5B in FASB ASC 350-30-35. However, IPR&D assets are specifically scoped out from this guidance.

2.34 As discussed in paragraph 2.10, if the reporting entity intends to hold (or lock up) an acquired intangible asset to prevent others from obtaining access to the asset so as to "defend"

the value of other intangible assets used in R&D activities, the task force believes that such asset would be considered "used in R&D activities." Therefore, in accordance with guidance in FASB ASC 350-30-35-17A, the task force believes that such assets would be assigned an indefinite life until the "defended" IPR&D project is completed or abandoned. However, others believe that it may be acceptable to analogize to guidance in FASB ASC 350-30-35-5A and assign such assets a finite life.

2.35 Acquired intangible assets that defend developed products would not be considered "used in R&D activities" because they will not be associated with R&D (see the "Used in R&D Activities Criteria" section for further discussion). As a result, these assets would be within the scope of guidance in FASB ASC 350-30-35-5A, which provides that "[a] defensive intangible asset shall be assigned a useful life that reflects the entity's consumption of the expected benefits related to that asset." As indicated in FASB ASC 350-30-35-5B, "[i]t would be rare for a defensive intangible asset to have an indefinite life because the fair value of the defensive intangible asset will generally diminish over time as a result of a lack of market exposure or as a result of competitive or other factors."

2.36 The task force also discussed circumstances in which an acquirer obtains control of a business that is pursuing numerous IPR&D projects or owns a great number of IPR&D assets (such as unpatented technology and know-how), or both, that the acquirer either does not need or does not intend to use further. The task force does not believe that it would be appropriate to write off the fair value of those assets through income on the acquisition date.

2.37 The task force observes that an entity may acquire an identifiable intangible asset that is attributable to an IPR&D project that it does not plan to pursue further development of, but which the acquirer may not expect to derive defensive value from, nor does it expect to subsequently sell or license or rent the intangible asset. Intangible assets with these characteristics are not the primary asset acquired or a basis for the acquisition of the business. It may take a period of time for the acquirer to determine what it might ultimately do with these assets. In order to conclude that such an acquired intangible asset is not a defensive intangible asset, the task force notes that the acquirer would need to be able to conclude that continued ownership of the asset will not contribute to an increase (or maintenance) in the value of other assets owned by it. Assuming such a conclusion can be made, the task force believes that such an intangible asset would not meet the "used in R&D activities" criteria (discussed in the "Used in R&D Activities Criteria" section of this chapter). However, the acquirer would need to recognize and measure such an intangible asset at its fair value using the assumptions of a market participant. Most commonly, such assets will not have a significant (individual) fair value, but, in the aggregate, may be material to the acquirer. The task force believes that such assets should be written off when the acquirer decides not to use them in any way and deems them abandoned (that is, it will not pursue further development of those assets, will not derive defensive value from them, will not sell or license or rent them).[7] The task force expects that it would be

[7] If such a decision is made close to the acquisition date, the task force recommends that the reporting entity reassesses market participant assumptions used to measure the asset's acquisition date fair value and considers whether those assumptions are still appropriate in light of the entity's decision not to use the asset. Also see question 3 in paragraph 2.71 for further discussion.

uncommon to expense such intangible assets immediately upon acquisition.

Questions and Answers—Defensive IPR&D Assets

2.38 *Question*: Company A acquires Company X. At the time of the acquisition, Company X owns patented technology and know-how that is in development and, if successfully completed, would compete with a technology under development by Company A. Company A does not intend to pursue further development of the patented technology and know-how of Company X. Rather, it will hold it to "protect" the value of the technology under development by Company A. What depreciable (accounting) life should Company A assign to the patented technology and know-how of Company X?

Answer: In such an instance, Company A may assign an indefinite life to the acquired patented technology and know-how at the time of acquisition. Company A would begin amortizing the acquired asset(s) once it had completed the development of its technology or, if the development efforts were abandoned, it would expense the carrying amount of the acquired technology in the period of abandonment unless the acquirer intended to develop the acquired technology in the event the development of the existing technology is unsuccessful.

Determining the Useful Life of an IPR&D Asset

2.39 The task force considered current practice and the guidance in FASB ASC 350-30-35-17A and whether all IPR&D assets acquired in a business combination (including those that have an alternative future use) must be assigned an indefinite life until such time when R&D activities are completed or abandoned.

2.40 FASB ASC 350-30-35-17A provides that "[i]ntangible assets acquired in a business combination or an acquisition by a not-for-profit entity that are used in research and development activities (regardless of whether they have an alternative future use) shall be considered indefinite lived until the completion or abandonment of the associated research and development efforts." However, there are circumstances in which the task force believes that assigning an indefinite life to all IPR&D assets acquired in a business combination (including those that are not exclusively used in R&D activities) is not representationally faithful. For example

- assume Company A acquires Company X. Company X owns a patent of intellectual property used in the production of integrated circuits based on 45 nanometer transistors. Company X uses that intellectual property in the production and sale of integrated circuits to its customers. Company X is also using that intellectual property in certain ongoing R&D activities. Company A expects to continue to use the intellectual property in identified *future R&D* activities. The task force believes that it would not be representationally faithful for Company A to assign the acquired patent an indefinite life upon acquisition because (1) a patent has a finite legal life; and (2) the patent is being used in revenue-generating activities.

- assume Company A, a pharmaceutical company, acquired Company X in a business combination. Company X's assets include a library of molecules for high-throughput

screening of drug candidates. Company X is using portions of the library in its existing specific IPR&D projects, and it is reasonably expected that other portions will be used in currently identified future projects. The task force believes that it would not be representationally faithful for Company A to assign the acquired library of molecules an indefinite life upon acquisition because the library may be reasonably expected to produce economic benefits for a finite period of time, and the acquired library of molecules is a tool that is completed and is being used the way it is intended to be used (that is, in R&D activities).

2.41 In general, the task force believes that *incompleteness*, as further described in the subsequent section "Specific IPR&D Projects—Incompleteness," is an essential characteristic of IPR&D assets. The task force believes that intangible assets lacking that characteristic (that is, assets that are complete) should be accounted for in accordance with their nature and that intangible assets that are incomplete and used in R&D activities should be assigned an indefinite useful life upon acquisition. The task force believes that this approach is consistent with predominant practice.

2.42 However, the task force believes that to the extent that individually completed intangible assets are directly related to IPR&D projects that are still in development, for example, in the pharmaceutical industry, a patent on a compound that has not yet been approved, such assets may be aggregated with other intangible assets used in R&D activities. That is, an acquirer would recognize one asset for each IPR&D project, which would comprise all the intangible assets used exclusively in that project, and that asset would be assigned an indefinite useful life.

2.43 As a result of the guidance in FASB ASC 350-30-35-17A, the task force believes that a reporting entity should select an accounting policy relative to the circumstances in which the entity will assign an other than indefinite life to acquired IPR&D assets.

Tangible Assets Used in R&D Activities

2.44 Acquired tangible assets to be used in R&D activities (for example, computer testing equipment used in an R&D department) should be recognized and measured at their fair value. After initial recognition, acquired tangible assets that are used in R&D activities are accounted for in accordance with their nature.

Explanatory Comments

Scope of R&D Activities

2.45 Paragraphs 3–5 of FASB ASC 730-10-15 set forth broad guidelines on the activities whose costs are and are not to be classified as R&D. Paragraphs 1–2 of FASB ASC 730-10-55 identify activities that are and are not within the FASB ASC definition of *R&D activities*. Although FASB ASC 730-10-15-4(f) explicitly excludes "research and development assets acquired in a business combination" from the scope of FASB ASC 730-10, the examples provided in FASB ASC 730-10-55 may be useful in determining whether an activity in a business combination is typically considered R&D. These paragraphs are reproduced here

subsequently:

55-1. The following activities typically would be considered [R&D]…:

a. Laboratory research aimed at discovery of new knowledge

b. Searching for applications of new research findings or other knowledge

c. Conceptual formulation and design of possible product or process alternatives

d. Testing in search for or evaluation of product or process alternatives

e. Modification of the formulation or design of a product or process

f. Design, construction, and testing of preproduction prototypes and models

g. Design of tools, jigs, molds, and dies involving new technology

h. Design, construction, and operation of a pilot plant that is not of a scale economically feasible to the enterprise for commercial production

i. Engineering activity required to advance the design of a product to the point that it meets specific functional and economic requirements and is ready for manufacture

j. Tools used to facilitate research and development or components of a product or process that are undergoing research and development activities.[8]

55-2. The following activities typically would not be considered [R&D]…:

a. Engineering follow-through in an early phase of commercial production

b. Quality control during commercial production including routine testing of products

c. Trouble-shooting in connection with break-downs during commercial

[8] In October 2011, FASB issued proposed Accounting Standards Update (ASU), *Technical Corrections*, which, among other things, recommends amending FASB ASC 730-10-55-1(j) as follows: "~~Tools~~Design and development of tools used to facilitate research and development or components of a product or process that are undergoing research and development activities." This is an editorial amendment to conform the wording to make item (j) consistent with the lead-in sentence and preceding list that is a list of research and development activities, rather than a resulting item of the research or development process. Comments on this proposal are due by December 13, 2011. The latest information on the status of this project is available at www.fasb.org/cs/ContentServer?site=FASB&c=FASBContent_C&pagename=FASB%2FFASBContent_C%2FProjectUpdatePage&cid=1176158605422.

production

d. Routine, on-going efforts to refine, enrich, or otherwise improve upon the qualities of an existing product

e. Adaptation of an existing capability to a particular requirement or customer's need as part of a continuing commercial activity

f. Seasonal or other periodic design changes to existing products

g. Routine design of tools, jigs, molds, and dies

h. Activity, including design and construction engineering, related to the construction, relocation, rearrangement, or start-up of facilities or equipment other than the following:

(1) Pilot plants…

(2) Facilities or equipment whose sole use is for a particular research and development project.

i. Legal work in connection with patent applications or litigation, and the sale or licensing of patents.

Questions and Answers—Scope of R&D Activities

2.46 *Question 1*: Company A acquired Company X in a business combination. Company X produces a personal financial management software package and currently is marketing Version 4.2 of that product. Company X provides periodic updates to its customers who have subscribed to postcontract customer support. At the acquisition date, development of Version 4.3 was underway and was approximately 60 percent complete. Version 4.3 will correct programming errors (bug fixes) and provide minor improvements that do not extend the life or improve significantly the marketability of the personal financial management software. Do the efforts to develop Version 4.3 meet the scope requirements of R&D activities?

Answer: No. FASB ASC 730-10-55-2 provides examples of activities that typically are excluded from its definition of R&D. In describing activities that are not typically R&D, FASB ASC 730-10-55-2(d) says that "routine, on-going efforts to refine, enrich, or otherwise improve upon the qualities of an existing product" do not meet the definition of R&D. The activities described with respect to the development of Version 4.3 fall within the type of activities described in FASB ASC 730-10-55-2(d) and, therefore, are not R&D activities. The fair value of Version 4.2 should reflect the improvements made through the efforts to develop Version 4.3 and would be recognized as an intangible asset provided the asset meets the criteria of being *identifiable* as defined in the FASB ASC glossary for separate recognition apart from goodwill. In contrast, the task force believes that efforts to develop an upgrade or enhancement to an existing product that is intended to extend the life or improve significantly the marketability of the original product

would generally meet the definition of *R&D activities*.

2.47 *Question 2*: Company A acquired Company X, a telecommunications company, in a business combination. At the acquisition date, Company X was developing new software to run its switches that are necessary for various telephone services (for example, voice mail and call forwarding) that it provides to its customers. Company X does not plan to sell, license, or market the software under development; rather, Company X plans to use the software internally to help provide the telephone services to its customers. Company A decided that the reporting entity would continue the development of the new software. Do the efforts to develop the new software meet the scope requirements of an IPR&D project?

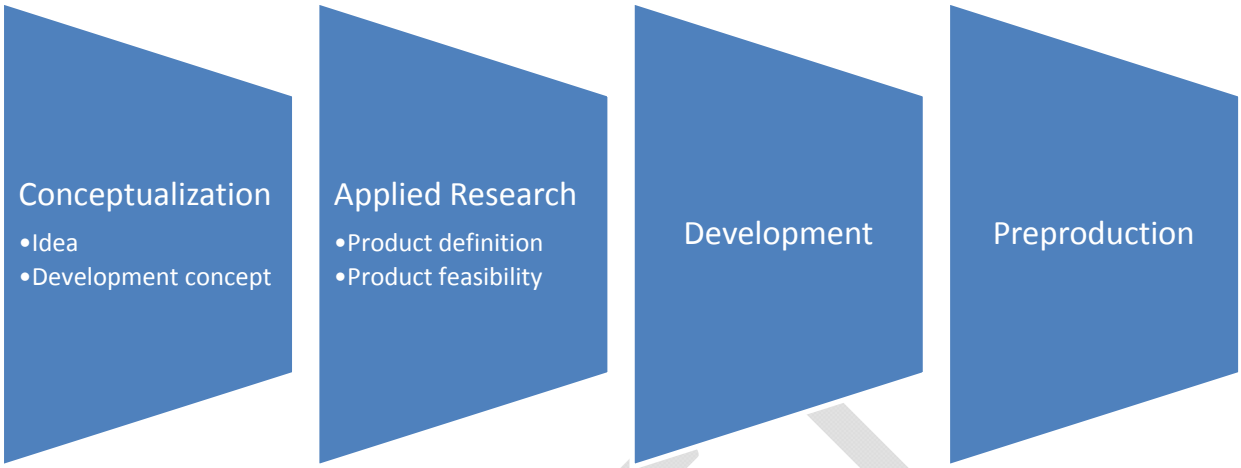
Answer: No. To qualify as an IPR&D project, the activities and costs should be R&D, as described in FASB ASC 730-10. FASB ASC 350-40 provides that the costs related to the development of the new software that will be used internally are not R&D costs (unless it is a pilot project or the software will be used in a R&D project). In that case, the internal-use software project should be capitalized and accounted for in accordance with the provisions of FASB ASC 350-40 (provided the asset meets the criteria of being *identifiable* as defined in FASB ASC glossary for separate recognition apart from goodwill). However, if Company X also were engaged in licensing software as an element of its switching equipment and had a substantive plan in existence or under development to externally market the acquired software under development and Company A intended to carry through on that plan, the activities and costs of the new software under development would qualify as R&D in accordance with FASB ASC 730-10, and the software development project would meet the scope requirements of an IPR&D project. Costs of that project incurred subsequent to the consummation of the business combination would be accounted for in accordance with the provisions of FASB ASC 985-20.

2.48 *Question 3*: Company A acquired Company X in a business combination. Company X produces a well-known cardiovascular product to treat hypertension. Company X has been working on a process change to increase its production yields and create more efficiency in its manufacturing process. The process change is significant and considered to be nonroutine. FDA approval of the process change is required due to the nature of the expected change, and the approval had not been obtained at the acquisition date. Do the efforts to develop the process change meet the scope requirements of R&D activities?

Answer: Yes. FASB ASC 730-10-55-1 provides examples of activities that typically would be considered R&D activities. The task force believes that because FDA approval of the process change is required, the process modifications fall within example in FASB ASC 730-10-55-1(e), which specifically addresses modification of the formulation or design of a product or process.

Specific IPR&D Projects—Life Cycle

2.49 R&D projects are managed in a variety of ways and, as a result, it is not always clear when a specific project has substance or whether it has been completed. One way to view an R&D project is to consider it as having a life cycle, which in a basic form, might consist of four phases depicted as follows:



2.50 Within the earlier phases, the attribute of substance gradually evolves to the point at which it can be demonstrated; within the later phases, the project reaches a point at which it is no longer considered incomplete. Those four phases (more than one of which may be occurring simultaneously) are as follows:

a. *Conceptualization*. This phase entails coming up with an idea, thought, new knowledge, or plan for a new product, service, or process, or for a significant improvement to an existing product, service, or process, or it may represent a decision by a company to focus its research activities within certain core competencies. Management might make an initial assessment of the potential market, cost, and technical issues for ideas, thoughts, or plans to determine whether the ideas can be developed to produce an economic benefit.

b. *Applied research*. This phase represents a planned search or critical investigation aimed at the discovery of additional knowledge in hopes that it will be useful in defining a new product, service, or process that will yield economic benefits, or significantly improve an existing product, service, or process that will yield economic benefits. In addition, work during this phase assesses the feasibility of successfully completing the project and the commercial viability of the resulting expected product, service, or process.

c. *Development*. This phase represents the translation of research findings or other knowledge into a detailed plan or design for a new product, service, or process, or for a significant improvement to an existing product, service, or process, and carrying out development efforts pursuant to the plan.

d. *Preproduction*. This phase represents the business activities necessary to commercialize the asset resulting from R&D activities for the entity's economic

benefit.

2.51 Managers of the R&D project may require, at various points (or gates) during the life cycle, an evaluation of the probability of success and the potential economic results. At each gate, a decision may be made about whether to continue funding the project. (See exhibit 2-1, "Phases of Development in the Pharmaceutical Industry," for a further description of phases that are particular to the pharmaceutical industry in the United States.)

Specific IPR&D Projects—Substance

2.52 A future product, service, or process is defined, and its potential economic benefits are identified at some point within the life cycle after the project's conceptualization. After the time that a future product, service, or process has been defined and its potential economic benefits have been identified, a specific IPR&D project begins to demonstrate substance. This generally occurs when more than insignificant R&D efforts have been expanded after the characteristics of the future product, service, or process have been defined. In contrast, if the acquired company has only articulated a concept, this does not constitute substantive activities.

2.53 Factors that may demonstrate that a specific IPR&D project has substance include whether management has

- acquired the business to obtain the project, or the project constituted a significant part of the business acquired.
- considered the impact of potential competition and other factors (that is, existing patents that would block plans for further development and commercialization) on the potential economic benefits of the project.
- approved continued project funding.
- been able to make reasonably reliable estimates of the project's completion date.
- been able to make reasonably reliable estimates of costs to complete.

2.54 In many circumstances, there will be written evidence of the specific IPR&D project's economic and technical objectives (including identification of its technological, engineering, and regulatory risks) in the acquired company's records. In addition, there will be periodic contemporaneously prepared evidence of the progress being made as the specific IPR&D project evolves to completion. That data will aid in verifying that the acquired IPR&D project had substance at the acquisition date.

Questions and Answers—Substance

2.55 *Question 1*: Company A, a pharmaceutical company, acquired Company X, a biotechnology company engaged in cancer R&D, in a business combination. Company X is

developing a small molecule compound that is thought to have a therapeutic application in the cancer market. The company has incurred R&D costs in (*a*) screening approximately 5,000 compounds, (*b*) identifying eight lead compounds, and (*c*) determining that they have the desired effect on the biological "target" (a part of the body, such as a protein, receptor, or gene; or something foreign to the body, such as a bacteria or virus that appears to play an important role in causing certain diseases), whose function is understood and has been validated. (See exhibit 2-1 of this chapter for a further description of phases that are particular to the pharmaceutical industry in the United States.) The eight compounds are considered potential drug development candidates, and Company X has gathered sufficient scientific data to decide to advance these compounds to phase I clinical testing (that is, testing in humans). Based on Company X's understanding of the biological target's function and scientific data available in the public domain, Company X is able to make some general predictions on potential therapeutic benefits in treating several types of cancer and side effects of the compounds, if successful. The activities already undertaken by Company X have resulted in its reporting R&D expenses. A multitumor cancer drug represents a significant market opportunity. Although no detailed market research has been conducted, market projections have been prepared based on patient population and cancer incidence rates. Patent searches have been completed with no findings of any patents that would block Company X's plans for further development and commercialization of the compounds. In addition, Company X has filed for patent protection of these compounds. Have sufficient R&D activities been undertaken for this small molecule program such that at the acquisition date, the acquired IPR&D projects have substance?

Answer: Yes. The eight compounds that may lead to possible drug development candidates have progressed far enough through the R&D life cycle to have substance. Company X has selected a specific biological target whose function is understood and has been well validated. Company X has determined that the eight lead compounds have the desired effect on the biological target and do not interact with other tissues in the body. Consequently, it is reasonable to anticipate that these compounds may lead to a drug for treating cancer. Company X has gathered enough scientific data to decide to advance these compounds to phase I clinical testing. Market potential can be reasonably estimated because incidence of cancer by tumor type is well documented and tracked by several reputable independent organizations. Market share for a particular compound can be estimated by reviewing data currently available in the public domain that tracks patented programs by biologic target from preclinical testing through market launch. Thus, Company X can determine the number of competitors conducting research on a particular biologic target and estimate the potential order of entry given the competitors' stages of development.

2.56 *Question 2*: Company A acquired Company X in a business combination. Company X designs and markets switches for sale to telecom companies, which use the switches to route telephone communications through their systems. Company X developed a routing technology for a switch that it believes will be pivotal in creating the next generation of switches to route Internet and video data over telephone systems (that is, it had completed the conceptualization and research phases of the project). Before the acquisition, Company X had surveyed several telecom companies to assist in designing the specifications of the proposed switch. In addition, Company X had a documented plan for development of the switches, which it expected would be complete in 18 months. As of the date of the acquisition, the IPR&D project had been underway for 2 months. Have sufficient R&D activities been undertaken such that, at the date of

acquisition, the specific IPR&D project has substance?

Answer: Yes. As of the date of the acquisition, Company X had completed the conceptualization and research phases of the project and was partially through development of the new switch. As a result, the project satisfied the attribute of substance.

2.57 *Question 3*: Company A acquired Company X in a business combination. Company X was an established contract manufacturer of electronic components. An important aspect of its manufacturing process involved the extrusion of copper wire into extremely fine strands. The R&D department of Company X had targeted improvements in this aspect of the manufacturing process as one of its top priorities. The basic objective of such a project would involve significant improvements to the current process that would further reduce the diameter of the copper strands without significantly increasing manufacturing costs (for example, through lower yields of acceptable material or increased consumption of energy and indirect materials). As of the date of the acquisition, Company X's R&D personnel had begun studying possible technological improvements to the extrusion process by researching relevant technical and academic material that was in the public domain. Company X's R&D personnel also had conducted an all-day "brainstorming" session in which a number of theoretical approaches were debated. As a result of that meeting, a consensus on the most promising approach had been identified, and a project plan was being drafted that would define expected timing, resource requirements, and key technical issues of the R&D project. Company X personnel were excited about the novel approach and believed that the project had a fairly high likelihood of ultimate success. Have sufficient R&D activities been undertaken such that, at the acquisition date, the specific IPR&D project has substance?

Answer: No. At the date of the acquisition, Company X's R&D project had only been conceptualized. Company X had not expended a more than insignificant effort in R&D activities to advance existing knowledge and technology toward the project objective. As a result, even though the project concept was promising, the project lacked substance at the acquisition date and would not qualify to be recognized as an asset.

Specific IPR&D Projects—Incompleteness

2.58 At some point before commercialization (that is, before earning revenue), and possibly before the end of the development or preproduction stages, the task force believes that the IPR&D project is no longer considered incomplete for accounting purposes (that is, ultimate completion of the project has occurred), and an asset resulting from R&D emerges from what was previously an asset used in R&D.

2.59 The attribute of incompleteness with respect to a specific IPR&D project acquired as part of a business combination suggests that there are remaining technological or engineering risks, or regulatory approvals.

2.60 The following two factors would need to be considered in evaluating whether activities making up a specific R&D project are incomplete at the acquisition date:

a. Whether the reporting entity expects to incur more than de minimus future costs related to the acquired project that would qualify as R&D costs under FASB ASC 730-10, and

b. Additional steps or milestones in a specific R&D project remain for the reporting entity, such as successfully overcoming the remaining risks or obtaining regulatory approvals related to the results of the R&D activities

2.61 Examples of circumstances that the task force believes demonstrate that a specific R&D project is incomplete as of the date of acquisition include the following:

- *Tangible products that are not subject to governmental regulations.* The acquired company's project has not reached a level of completion such that "first customer acceptance" (or a similar demonstration of completion for those products not subject to first customer acceptance) of the product has occurred. The task force notes that obtaining customer acceptance for a new product often requires a demonstration of the product's performance in relation to planned operating measurements. Therefore, obtaining first customer acceptance evidences completion of the project. Upon achieving first customer acceptance (or a similar demonstration of completion for those products not subject to first customer acceptance), the reporting entity would not incur additional costs that qualify as R&D pursuant to FASB ASC 730-10 to further develop the product.

- *Software to be sold, licensed, or otherwise marketed.* The software product is not available for general release to customers. The task force notes that the risks of successful completion of a software project are sometimes greater than for a hardware project. In formulating the guidance for completion of a specific IPR&D project for the development of software, the task force looked to the requirements of FASB ASC 985-20-25-6, which indicates that completion of a software project is not necessarily tied to technological feasibility but rather to availability of the product for general release to customers.

- *Pharmaceutical products and processes related to right to market or use that are subject to governmental regulations.* The acquired company's product or process has not been approved for marketing or production by the appropriate regulatory body. Approval for marketing for this purpose includes only the approval of the product to be marketed. For example, in the United States, the task force believes that only FDA approval of a product is sufficient for a project to be complete (FDA approval of a product for marketing also includes approval of the manufacturing process). Approval of the label or, where applicable, the pricing, is not necessary for the project to be complete.

2.62 There may be circumstances in which a specific IPR&D project comprises a number of subprojects that, individually, could be used by the reporting entity in a manner that would create an anticipated economic benefit. (See the "Unit of Account" section for further discussion.) If any of those subprojects are complete and it is anticipated that the reporting entity will derive

incremental economic benefit from the discrete exploitation of those subprojects, then the fair values of the completed subprojects would represent assets resulting from R&D activities. As a consequence, the fair values of those projects would be recognized and accounted for in accordance with the provisions of FASB ASC 350, *Intangibles—Goodwill and Other*, provided the assets meet the criteria in FASB ASC 805 for separate recognition apart from goodwill.

2.63 For example, the acquired company may be in the process of developing a variety of software products that can be marketed both individually and in combination as an integrated suite of products (the suite). The development effort for certain of the individual products is complete, and the development of the others is incomplete. Consequently, the development of the suite is incomplete. If it is anticipated that the reporting entity will market the discrete products individually and include the discrete products as part of the suite, the task force believes that the fair value of any of the individual products whose development is complete should be capitalized as an asset resulting from R&D activities, provided the asset meets the criteria in FASB ASC 805 for separate recognition apart from goodwill.

Questions and Answers—Incompleteness

2.64 *Question 1*: Company X was acquired in a business combination and had an IPR&D project to develop the next generation of its microchip. The project was estimated to be 70 percent complete in terms of costs incurred. Although time-consuming and expensive technological and engineering hurdles remain, they are not believed to be high-risk development issues and not considered particularly difficult to accomplish. In fact, in similar previous development efforts, Company X consistently demonstrated that it could accomplish the remaining tasks once it got to a similar stage of completion. However, the remaining tasks are of the type described as R&D activities in FASB ASC 730-10-55-1, rather than of the type of activities described in FASB ASC 730-10-55-2 that are not considered R&D activities. Is the project incomplete?

Answer: Yes, because first customer acceptance of the microchip has not occurred. Even though the likelihood of success in achieving first customer acceptance may seem high based on Company X's history, first customer acceptance has not occurred, and additional qualifying R&D costs will be incurred. Consequently, completion of the project has not occurred at the date of acquisition.

2.65 *Question 2*: Company A acquired Company X in a business combination. At the acquisition date, Company X had an IPR&D project in process to develop the next generation of its job scheduling software. Company X had delivered a working model of the software to several of its customers as part of the beta test stage. As of the acquisition date, engineers were working to incorporate improvements discovered as a result of the beta testing. Company A expects to complete the development and market any resulting product in a manner generally consistent with the plans of Company X that existed at the acquisition date. Is the project incomplete?

Answer: Yes. The task force notes that although the project may have reached technological feasibility as discussed in FASB ASC 985-20, the project is still incomplete. Technological

feasibility of a computer software product is established when the enterprise has completed all planning, designing, coding, and testing activities that are necessary to establish that the product can be produced to meet its design specifications, including, functions, features, and technical performance requirements. Despite reaching technological feasibility, additional research or development, or both, may be required in order for the product to be available for general release to customers. In summary, completion of a software project is not necessarily tied to technological feasibility, but rather to availability of the product for general release to customers.

2.66 *Question 3*: Company A acquired Company X in a business combination. At the acquisition date, Company X had an application to market a new drug pending FDA approval. Both Company A and X believe that Company X had completed all necessary tasks related to the filing (including having obtained satisfactory test results), and they believe that they will ultimately obtain FDA approval. Is the project incomplete?

Answer: Yes. Industry experience shows that there are uncertainties about obtaining approval for a new drug upon filing with the FDA. FASB ASC 730-10 does not specifically address whether costs of obtaining FDA approval are R&D; however, the task force believes that such future expenditures satisfy the condition that, to be considered incomplete, additional R&D costs must be incurred by the reporting entity.

2.67 *Question 4*: Company X was acquired in a business combination and was involved in the design, manufacture, and marketing of consumer video communications devices. Company X had a successful product in the market and had been working on the next generation of the product, which involved significant improvements to features and functions. Given the target market of young retail consumers, Company X planned to debut the new product at an upcoming trade show, followed shortly after by a nationwide marketing campaign. For competitive reasons, Company X did not allow prototypes of the product outside of its facilities, although it did use focus groups representing its target market demographics for feedback on design and features, product and performance quality, and marketing approaches. As of the acquisition date, Company X had approved the design and specifications of the latest prototype of new product as being ready for commercial manufacture. As a result, Company X's production facilities were preparing to begin mass production of product intended for commercial sale. However, Company X had yet to finalize specifications of the product shell (for example, color, ergonomic design, and brand graphics), which were still being tested with the focus groups. Commercial manufacturing had not yet begun, and no products had been sold. Is the project incomplete?

Answer: No. The R&D project related to the significant improvement of the existing product has been completed, and there are no remaining R&D costs to be incurred. The remaining tasks before commercial manufacture and product launch do not involve technological or engineering risks, and the associated costs would not qualify as R&D. Although first customer acceptance has not occurred, Company X has demonstrated an equivalent internal milestone based on its product development practices and life cycle.

Questions and Answers—Miscellaneous

2.68 In addition to the topics discussed previously, the task force identified the following

questions related to the accounting for business combinations, which are intended to aid in the application of the best practices.

2.69 *Question 1*: *Measurement Period*: In recording a business combination, if information (such as a third-party valuation report) is not available to estimate fair value of assets acquired to be used in R&D activities in the period when the business combination closes, is a preliminary estimate of fair value required to be recorded for those assets?

Answer: Yes. FASB ASC 805-10-25-13 provides guidance on when an acquirer should recognize and measure assets acquired to be used in R&D activities in connection with recording the acquisition of a business:

> If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the acquirer shall report in its financial statements provisional amounts for the items for which the accounting is incomplete. During the measurement period, the acquirer shall retrospectively adjust the provisional amounts recognized at the acquisition date to reflect new information obtained about facts and circumstances that existed as of the acquisition date that, if known, would have affected the measurement of the amounts recognized as of that date.

Further, FASB ASC 805-10-25-17 states

> During the measurement period, the acquirer shall recognize adjustments to the provisional amounts as if the accounting for the business combination had been completed at the acquisition date. Thus, the acquirer shall revise comparative information for prior periods presented in financial statements as needed, including making any change in depreciation, amortization, or other income effects recognized in completing the initial accounting. Paragraph 805-10-55-16 and Example 1 (see paragraph 805-10-55-27) provide additional guidance.

Best practices suggest that the acquirer often is able to estimate fair value of assets acquired to be used in R&D activities in the same accounting period that the business combination is consummated based on the due diligence it performs before or immediately after agreeing to the terms of the acquisition. Exceptions may be acquisitions of very large companies with significant R&D activities and hostile takeover situations. In those circumstances, the task force believes that best practice would be for the acquirer to (*a*) record its best estimate within the range of possible fair values of the assets acquired to be used in R&D activities for purposes of recording its provisional amount, and (*b*) provide the disclosures as outlined in FASB ASC 805-10-50-6:

> If the initial accounting for a business combination is incomplete (see paragraphs 805-10-25-13 through 25-14) for particular assets, liabilities, noncontrolling interests, or items of consideration and the amounts recognized in the financial statements for the business combination thus have been determined only provisionally, the acquirer shall disclose the following information for each material business combination or in the aggregate for individually immaterial business combinations that are material collectively to meet the objective in preceding paragraph

a. The reasons why the initial accounting is incomplete

b. The assets, liabilities, equity interests, or items of consideration for which the initial accounting is incomplete

c. The nature and amount of any measurement period adjustments recognized during the reporting period in accordance with paragraph 805-10-25-17.

2.70 *Question 2*: *Equity Method Investment*: How should an acquirer apply IPR&D accounting requirements to initial investments in common stock that are to be accounted for using the equity method? Would the acquirer be precluded from using the equity method of accounting in circumstances in which the acquirer's lack of control precludes access to reliable information on which to base a determination of the existence of IPR&D projects, estimate their fair value with reasonable reliability, or both? In this question, it is assumed that the investee meets the definition of a *business* in the FASB ASC glossary. Chapter 3 addresses a similar situation in which the investee does not meet the FASB ASC glossary definition of a *business* (see question 3 in the "Questions and Answers—Miscellaneous" section of chapter 3).

Answer: FASB ASC 323, *Investments—Equity Method and Joint Ventures*,[9] requires that the difference between the cost of an investment and the amount of underlying equity in net assets of an investee be accounted for as if the investee were a consolidated subsidiary. Accordingly, the task force believes the value related to the investor's proportionate interest in intangible assets acquired to be used in R&D activities would be recognized as an acquired IPR&D asset in the acquirer's pro forma analysis for determining equity method income or loss and subsequently accounted for like any IPR&D asset acquired in a business combination. In the subsequent accounting, however, the task force notes that FASB ASC 323-10-35-32A states that

> an equity method investor shall not separately test an investee's underlying asset(s) for impairment. However, an equity investor shall recognize its share of any impairment charge recorded by an investee in accordance with the guidance in paragraphs 323-10-35-13 and 323-10-45-1 and consider the effect, if any, of the impairment on the investor's basis difference in the assets giving rise to the investee's impairment charge.

FASB ASC 323-10-15-10 provides examples of indicators that an investor may be unable to exercise significant influence over the operating and financial policies of an investee. Item (d) provides the following indicator that the equity method may not be appropriate (in this question, it is assumed that other indicators listed in FASB ASC 323-10-15-10 are not present): the

[9] FASB and the International Accounting Standards Board are currently working on a joint project, *Accounting for Financial Instruments*, which may affect the equity method of accounting. Specifically, as of the date of publication of this guide, FASB tentatively decided that an entity would be required to classify and measure equity investments, which would otherwise qualify for the equity method of accounting, at fair value with changes in fair value recognized in net income if the investment is held for sale. The latest information on the status of this project is available at www.fasb.org/cs/ContentServer?c=FASBContent_C&pagename=FASB%2FFASBContent_C%2FProjectUpdatePage&cid=1175801889654.

investor needs or wants more financial information to apply the equity method than is available to the investee's other shareholders (for example, the investor wants quarterly financial information from an investee that publicly reports only annually), tries to obtain that information, and fails.

Nevertheless, the task force believes that an investee's sensitivity to maintain confidentiality with respect to the nature of its IPR&D projects may result in a circumstance in which an investor that has significant influence cannot obtain needed information to estimate the fair value of the investee's IPR&D with reasonable reliability.

Consequently, although the task force believes that an acquirer's inability to determine the fair value of assets acquired to be used in R&D activities would preclude the acquirer from assigning value to IPR&D in its pro forma analysis for determining equity method income or loss, that circumstance would not, in and of itself, preclude the use of the equity method of accounting.

The task force believes that the answer to question 1 of this section also applies to the assignment of the consideration paid to an equity investment.

2.71 *Question 3*: *Impact of Decision to Abandon R&D Efforts on Recognition and Measurement of the Associated R&D Project*: Subsequent to a business combination, but before the end of the measurement period, the reporting entity abandons R&D efforts associated with an R&D project that existed at the acquisition date. Should this R&D project be recognized as an IPR&D asset in the final accounting for the acquisition? Should the initial measurement of this R&D project be adjusted in the final accounting for the business combination?

Answer: The task force believes that whether this R&D project should be recognized as an IPR&D asset and whether its initial measurement should be adjusted in the final accounting for the business combination depends on the circumstances giving rise to the decision to abandon the associated R&D efforts. If the abandonment decision was based on circumstances that existed at the acquisition date (that is, circumstances analogous to a "recognized subsequent event" as discussed in FASB ASC 855, *Subsequent Events*), the task force believes that the abandoned R&D project would not meet the "used in R&D activities" criteria and, therefore, should not be recognized as an IPR&D asset in the final accounting for the business combination. However, this abandoned R&D project may still need to be recognized in the acquirer's financial statements if it meets the recognition criteria in FASB ASC 805. (See the "Used in R&D Activities Criteria" section of this chapter for further discussion.) In this case, it would still be measured at fair value, but its initial fair value measurement could be adjusted in the final accounting for the business combination to reflect change in market participant assumptions based on the circumstances that existed at the acquisition date but were not identified until later. An example of such circumstances might be if management of the acquirer had not had the opportunity to fully investigate the project as part of its due diligence procedures before the business combination and, subsequent to the business combination and before significant additional R&D costs had been incurred, determines that the expected economic benefits and associated risks of completion do not warrant continued funding of the project.

However, if the abandonment decision was based on circumstances that arose subsequent to the

acquisition date (that is, circumstances analogous to a “nonrecognized subsequent event”), the task force believes that the R&D project should be recognized as an IPR&D asset, and its initial measurement should not be adjusted in the final accounting for the business combination. An example of such circumstances might be if tests of the results of postacquisition development efforts are not promising and lead to the conclusion that the technological hurdles to successful completion cannot be realistically overcome. Another example might be if, subsequent to the business combination, a competitor introduces a product with performance and pricing characteristics that are superior to those envisioned for the planned product. In this case, the decision to abandon the associated R&D efforts would not be accounted as a part of a business combination, but rather would be a part of subsequent accounting. Abandonment of the associated R&D efforts would generally cause the indefinite-lived IPR&D asset to become a finite-lived asset (that is, amortizable intangible asset) and would likely result in an impairment of such asset. See the “Abandoning of the Associated R&D Efforts” section of chapter 4 for more information.

Exhibit 2-1: Phases of Development in the Pharmaceutical Industry[10]

DISCOVERY RESEARCH PHASE—TWO TO FOUR YEARS

This is the earliest phase of the new drug R&D process. In the discovery research phase, scientists attempt to identify, from the literally millions of molecules existing in the world, one that has a desired effect against a given disease or illness. This whole process begins with the identification of a biological "target" that appears to play an important role in causing the disease or illness in question. This target could be something that is a part of the body itself, such as a protein, receptor, or gene, or it could be something normally foreign to the body, such as a bacteria or virus. The process of identifying lead molecules (or leads) is a trial-and-error process in which tens of thousands of different molecules are tested or screened to see if they have a desirable impact on the target. For example, if the target is a particular bacteria that causes infection, those molecules that kill or inhibit the bacteria would be considered leads, and scientists would go on to the next phase of development. The probability of any one lead actually making it through the rest of the drug development process and becoming a product is extremely low.

EARLY DEVELOPMENT PHASE—FOUR TO SIX YEARS

The drug development phase is all about taking a lead molecule, refining it, learning how to manufacture it, and testing it for safety and efficacy. The initial testing takes place in animals and looks for toxicity and other potential safety issues that might preclude ever introducing the compound into humans. Standard predictive models are used to project these findings from animals into potential toxicity and dosing levels for humans. The first human tests (phase I) are conducted in a very small group of healthy volunteers to assess the safety and the potential dosing range. After a safe dose has been established, the drug is administered to a still relatively small population of sick patients (phase II) to look for initial signs of effectiveness in treating the targeted disease. In parallel to this animal and human testing, scientists are also developing a manufacturing process that will allow the molecule to be manufactured in a safe, efficient, and economical way. Long-term animal studies continue to test for potential toxicology issues. The early development phase is a very high-risk part of the overall process in which the vast majority of leads fail to move on to the next phase of the process. Those molecules that do show some initial signs of efficacy move on to the final phase of the R&D process, known as the "product phase."

PRODUCT PHASE—THREE TO FIVE YEARS

Those molecules that move on to the product phase (phase III) have already demonstrated safety and preliminary efficacy and, therefore, have a much higher likelihood of success. The drug is now tested in much larger patient populations to prove efficacy in a more rigorous and statistically significant way. These trials are generally global in nature and are designed to generate all the data necessary for inclusion in the regulatory submission documents. Often,

[10] As mentioned in paragraphs 2.49−2.50.

these studies will involve a comparison of the new drug with existing competitive therapies, with placebo, or both. All of the data is compiled and submitted to regulatory agencies around the world. Often, there will be several exchanges of questions and answers with the regulators, and then hopefully, the drug is approved for marketing.

Chapter 3

Accounting for Assets Acquired in an Asset Acquisition That Are to Be Used in Research and Development Activities

Introduction

3.01 As set forth in chapter 2, Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 805, *Business Combinations*, requires that an acquirer recognize and measure at fair value, separately from goodwill, the identifiable assets acquired in a business combination.[1] Identifiable assets acquired in a business combination that are to be used in research and development (R&D) activities are separately recognized and measured at fair value regardless of whether those assets have an alternative future use. Separately identifiable assets include both tangible and intangible assets, including intangible assets representing specific in-process R&D (IPR&D) projects to be pursued by the reporting entity. After initial recognition, tangible assets acquired in a business combination that are used in R&D activities are accounted for in accordance with their nature. After initial recognition, intangible assets acquired in a business combination that are used in R&D activities are accounted for in accordance with FASB ASC 350-30.

3.02 Consistent with FASB ASC 730-10-25-2, tangible and intangible assets that are purchased from others for use in R&D activities in a transaction other than a business combination (subsequently referred to as an *asset acquisition*) are capitalized only if they have alternative future uses. Otherwise, such assets are expensed.

3.03 While deliberating FASB Statement No. 141(R), *Business Combinations* (which was subsequently codified in FASB ASC 805, *Business Combinations*), FASB acknowledged the difference in treatment of assets used in R&D activities acquired in a business combination and those acquired in a transaction outside the scope of FASB ASC 805. However, in the interest of time, FASB decided to move forward with guidance on business combinations and separately reconsider the accounting for assets acquired in an asset acquisition for use in R&D activities (see paragraphs B154–B155 of FASB Statement No. 141(R), which were not carried forward into FASB ASC 805).

3.04 Emerging Issues Task Force (EITF) Issue No. 09-2, "Research and Development Assets Acquired and Contingent Consideration Issued In an Asset Acquisition," which was added to the EITF agenda in January 2009, was intended to address the inconsistencies between the accounting for assets acquired in a business combination to be used in R&D activities and the accounting for those assets acquired in other types of transactions. In September 2009, FASB

[1] See footnote 2 in paragraph .01 of the introduction for the definitions of a *business combination* and a *business*. This guide does not provide guidance on how to distinguish an asset acquisition from a business combination. The determination of whether or not acquired assets constitute a business depends on specific facts and circumstances and is subject to professional judgment.

issued an exposure draft of a proposed Accounting Standards Update (ASU), *Research and Development (Topic 730): Research and Development Assets Acquired and Contingent Consideration Issued in an Asset Acquisition (A Consensus of the FASB Emerging Issues Task Force)*, which, among other things, recommended that all tangible and intangible assets acquired in an asset acquisition for use in R&D activities be capitalized regardless of whether those assets have an alternative future use. However, the proposed ASU was never finalized, and the project was ultimately removed from the EITF agenda.

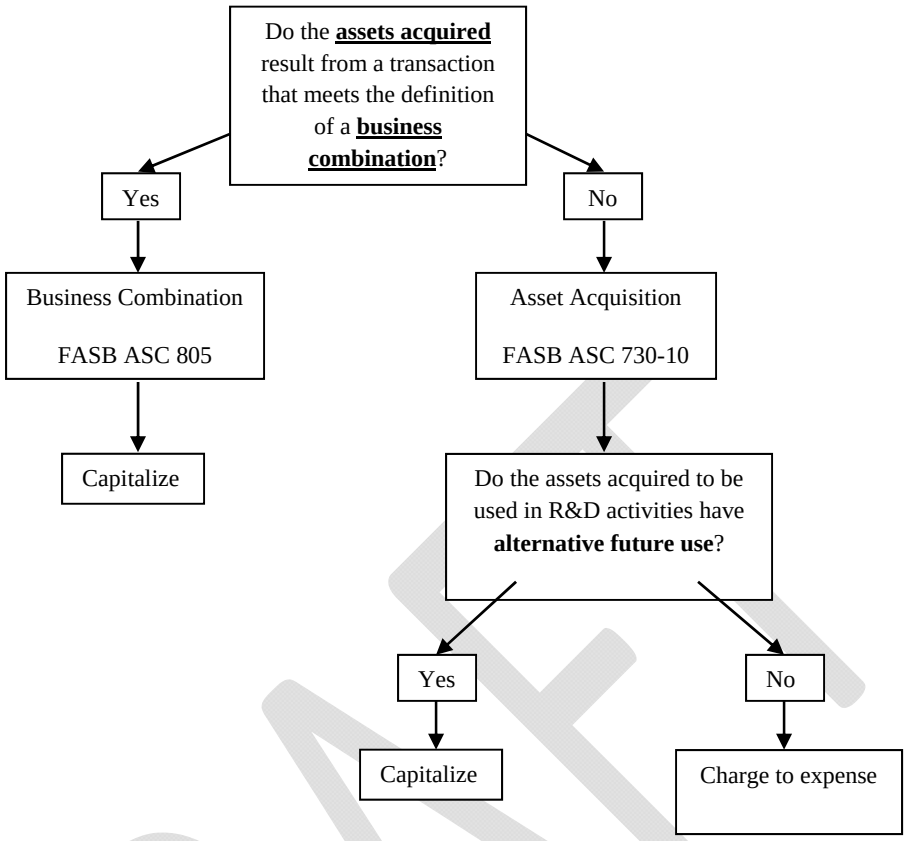
3.05 As a result, assets used in R&D activities acquired in a business combination and those acquired in an asset acquisition are still subject to different accounting treatment.

3.06 This chapter sets forth what the IPR&D Task Force (task force) believes are best practices in the accounting for assets acquired in an asset acquisition that are to be used in R&D activities. Additionally, this chapter highlights differences in accounting for assets used in R&D activities acquired in business combinations and those acquired in asset acquisitions. This chapter should be read in connection with chapter 2, which provides guidance on identifying and accounting for assets acquired in a business combination that are to be used in R&D activities. Specifically, chapter 2 discusses scope of R&D activities, recognition criteria applicable to specific IPR&D projects, "used in R&D activities" criteria, unit of account, core technology, assets held for sale, and other topics.

3.07 This chapter's "Introduction" and "Key Concepts" sections are supplemented by the "Explanatory Comments" section, which expands on the discussion and sets forth the task force's support for the determination of best practices. In addition, this chapter includes questions and the task force's answers, which are intended to aid in the application of the best practices.

3.08 In this guide, an R&D project that has not yet been completed is referred to as an *IPR&D project* (see chapter 2 for more information regarding projects). Intangible assets that are to be used or are used in R&D activities, including specific IPR&D projects, are referred to as *IPR&D assets*. References to *assets acquired for use (or, to be used) in R&D activities* encompass both tangible and intangible assets, unless indicated otherwise. In this chapter, unless indicated otherwise, references to *IPR&D assets* and *assets acquired for use (or, to be used) in R&D activities* refer to assets acquired in an asset acquisition.

3.09 The following diagram illustrates a thought process for evaluating transactions that involve acquisition of assets for use in R&D activities to determine the appropriate accounting for such assets and location of relevant guidance within this guide.



Key Concepts

Key Differences in the Accounting for Asset Acquisitions and Business Combinations

3.10 The list that follows briefly describes some of the key differences in the accounting for asset acquisitions and business combinations. This list is not all-inclusive, and there are other differences in the accounting for asset acquisitions and business combinations that are not discussed here because they do not have a direct impact on accounting for assets acquired for use in R&D activities. Readers should refer to FASB ASC 730-10 and 805 for further guidance on accounting for asset acquisitions and business combinations.

a. *Initial recognition of assets acquired for use in R&D activities*. Assets acquired in a business combination that are used in R&D activities are capitalized and measured at fair value. However, in an asset acquisition, assets that were acquired for use in R&D activities are capitalized only if they have alternative future use. Furthermore, assets acquired in asset acquisitions for use in R&D activities are measured at cost allocated based on their relative fair values. For further guidance, refer to the "Alternative Future Use" section and related questions and answers in this chapter.

b. *Useful lives of acquired IPR&D assets.* IPR&D assets acquired in a business combination are considered indefinite-lived until the completion or abandonment of the associated R&D efforts. IPR&D assets acquired in an asset acquisition may be either finite- or

indefinite-lived. When determining useful life of an IPR&D asset acquired in an asset acquisition, readers should refer to paragraphs 1–5 of FASB ASC 350-30-35, which provide guidance on determining useful life of an intangible asset. For further discussion, refer to question 1 in the "Questions and Answers—Miscellaneous" section of this chapter and the "Additional Considerations for Asset Acquisitions" section of chapter 4.

c. *Goodwill.* Based on guidance in FASB ASC 805-50-30-3, no goodwill is created in an asset acquisition. However, goodwill may be recognized in a business combination. Furthermore, if a portion of an acquired business is later disposed of, the entity would need to allocate goodwill to the disposed portion of the business. However, this would not be a consideration in asset acquisitions because no goodwill is recognized in those transactions.

d. *Transaction costs*. Based on guidance in FASB ASC 805-50-30-2, transaction costs in asset acquisitions are capitalized; however, with respect to business combinations, FASB ASC 805-10-25-23 requires that transaction costs be expensed in the periods in which the costs are incurred.

e. *Contingencies*. Contingencies acquired in an asset acquisition would be accounted for in accordance with FASB ASC 450, *Contingencies*, whereas contingencies acquired in a business combination should be recognized at fair value at the acquisition date to the extent determinable in accordance with FASB ASC 805-20-25 and, if not determinable, in accordance with FASB ASC 450. Specifically, FASB ASC 805-20-25-19 provides that "[i]f the acquisition-date fair value of the asset or liability arising from a contingency can be determined during the measurement period, that asset or liability shall be recognized at the acquisition date." However, if the acquisition-date fair value cannot be determined during the measurement period, consistent with FASB ASC 805-20-25-20, "an asset or a liability shall be recognized at the acquisition date if both of the following criteria are met: (a) Information available before the end of the measurement period indicates that it is probable that an asset existed or that a liability had been incurred at the acquisition date…and (b) The amount of the asset or liability can be reasonably estimated."

f. *Contingent Consideration*. In an asset acquisition, contingent consideration is accounted for in accordance with applicable accounting principles generally accepted in the United States of America (U.S. GAAP). For example, if a contingent consideration meets the definition of a *derivative*, FASB ASC 815, *Derivatives and Hedging*, requires that it be recognized at fair value. In addition, FASB ASC 450 may require recognition of the contingent consideration if it is probable that a liability has been incurred, and the amount of that liability can be reasonably estimated. As discussed in paragraphs 5–7 of FASB ASC 450-20-05, the measurement objective in FASB ASC 450 is inconsistent with the fair value measurement objective. Specifically, FASB ASC 450-20-30-1 states that "If some amount within a range of loss appears at the time to be a better estimate than any other amount within the range, that amount shall be accrued. When no amount within the range is a better estimate than any other amount, however, the minimum amount in the range shall be accrued." Therefore, contingent consideration in an asset acquisition may not be measured at fair value.

In a business combination, FASB ASC 805-30-25-5 requires that a contingent consideration be recognized at its acquisition-date fair value as part of the consideration transferred in exchange for the acquiree. Contingent considerations may be classified as equity, a liability, or an asset. Subsequently, FASB ASC 805-30-35-1 requires that contingent consideration classified as equity not be remeasured and that its subsequent settlement be accounted for within equity. FASB ASC 805-30-35-1 also requires that contingent consideration classified as an asset or a liability be remeasured to fair value at each reporting date until the contingency is resolved and that the changes in fair value be recognized in earnings unless the arrangement is a hedging instrument for which FASB ASC 815 requires the changes to be initially recognized in other comprehensive income.

Relevant Accounting Guidance

3.11 FASB ASC 805-50 contains guidance on the accounting and reporting for transactions that have certain characteristics that are similar to business combinations but do not meet the requirements to be accounted for as business combinations because the assets acquired and liabilities assumed do not constitute a business. Specifically, this subtopic contains the following guidance on acquisition of assets rather than a business:

Acquisition Date Recognition of Consideration Exchanged

FASB ASC 805-50-25-1. Assets commonly are acquired in exchange transactions that trigger the initial recognition of the assets acquired and any liabilities assumed. If the consideration given in exchange for the assets (or net assets) acquired is in the form of assets surrendered (such as cash), the assets surrendered shall be derecognized at the date of acquisition. If the consideration given is in the form of liabilities incurred or equity interests issued, the liabilities incurred and equity interests issued shall be initially recognized at the date of acquisition.

Determining Cost

FASB ASC 805-50-30-1. Assets are recognized based on their cost to the acquiring entity, which generally includes the transaction costs of the asset acquisition, and no gain or loss is recognized unless the fair value of noncash assets given as consideration differs from the assets' carrying amounts on the acquiring entity's books.

FASB ASC 805-50-30-2. Asset acquisitions in which the consideration given is cash are measured by the amount of cash paid, which generally includes the transaction costs of the asset acquisition. However, if the consideration given is not in the form of cash (that is, in the form of noncash assets, liabilities incurred, or equity interests issued), measurement is based on either the cost which shall be measured based on the fair value of the consideration given or the fair value of the assets (or net assets) acquired, whichever is more clearly evident and, thus, more reliably measurable.

Allocating Cost

FASB ASC 805-50-30-3. Acquiring assets in groups requires not only ascertaining the cost of the asset (or net asset) group but also allocating that cost to the individual assets (or individual assets and liabilities) that make up the group. The cost of such a group is determined using the concepts described in the preceding two paragraphs. The cost of a group of assets acquired in an asset acquisition shall be allocated to the individual assets acquired or liabilities assumed based on their relative fair values and shall not give rise to goodwill. The allocated cost of an asset that the entity does not intend to use or intends to use in a way that is not its highest and best use, such as a brand name, shall be determined based on its relative fair value.

Accounting After Acquisition

FASB ASC 805-50-35-1. After the acquisition, the acquiring entity accounts for the asset or liability in accordance with the appropriate generally accepted accounting principles (GAAP). The basis for measuring the asset acquired or liability assumed has no effect on the subsequent accounting for the asset or liability.

3.12 FASB ASC 730-10 establishes standards of financial accounting and reporting for R&D costs. It sets forth broad guidelines regarding what constitutes R&D activities; indicates the elements of costs to be identified with R&D activities; and specifies the accounting and disclosures for R&D costs. Specifically, FASB ASC 730-10-25-2 contains the following guidance:

(a) Materials, equipment, and facilities. The costs of materials (whether from the entity's normal inventory or acquired specially for research and development activities) and equipment or facilities that are acquired or constructed for research and development activities and that have alternative future uses (in research and development projects or otherwise) shall be capitalized as tangible assets when acquired or constructed. The cost of such materials consumed in research and development activities and the depreciation of such equipment or facilities used in those activities are research and development costs. However, the costs of materials, equipment, or facilities that are acquired or constructed for a particular research and development project and that have no alternative future uses (in other research and development projects or otherwise) and therefore no separate economic values are research and development costs at the time the costs are incurred.

(c) Intangible assets purchased from others. The costs of intangible assets that are purchased from others for use in research and development activities and that have alternative future uses (in research and development projects or otherwise) shall be accounted for in accordance with Topic 350. The amortization of those intangible assets used in research and development activities is a research and development cost. However, the costs of intangibles that are purchased from others for a particular research and development project and that have no alternative future uses (in other research and development projects or otherwise) and therefore no separate economic values are research and development costs at the time the costs are incurred.

Explanatory Comments

Alternative Future Use

3.13 As discussed previously, the concept of alternative future use is not relevant in the accounting for assets acquired in a business combination to be used in R&D activities. However, based on guidance in FASB ASC 730-10-25-2, the concept is still relevant for an asset acquisition in determining whether the allocated cost of these assets should be capitalized or immediately charged to expense.

3.14 For an asset acquired in an asset acquisition for use in R&D activities to have an alternative future use, the task force believes that (*a*) it is reasonably expected[2] that the reporting entity will use the asset acquired in the alternative manner and anticipates economic benefit from that alternative use, and (*b*) the reporting entity's use of the asset acquired is not contingent on further development of the asset subsequent to the acquisition date (that is, the asset can be used in the alternative manner in the condition in which it existed at the acquisition date).

3.15 If the use of the acquired asset is only in one or more other R&D projects of the reporting entity that have commenced[3] at the acquisition date, the task force believes that use represents a present (as opposed to a future) R&D activity, and the cost of that asset should be immediately charged to expense. If the asset will also be used in an R&D project to be commenced at a future date, the task force believes that such use is an alternative future use and that the cost of that asset should be capitalized.

3.16 Furthermore, the task force believes that an alternative future use that would require capitalization is one that is capable of using the assets acquired as those assets exist at the acquisition date. Consider a circumstance in which successful completion of an IPR&D project might give rise to additional R&D projects designed to significantly improve the just-completed product. Because those subsequent projects are contingent on the successful completion of the current project and would use the current R&D project in its future completed condition, the task force believes that they do not constitute an alternative future use at the acquisition date.

3.17 The task force believes that the determination of whether an alternative future use exists for an asset is based on specific facts and circumstances. However, for an acquired tangible asset to be used in R&D activities (for example, computer testing equipment used in an R&D department), the task force believes that there is a rebuttable presumption that such asset has an alternative future use because that asset generally has separate economic value (other than scrap or insignificant value) independent of the successful completion and commercialization of the IPR&D project. This presumption would be overcome, for example, if it were reasonably

[2] For purposes of this guide, *reasonably expected* is used in the context of its meaning as provided in footnote 18 of paragraph 25 of Financial Accounting Standards Board (FASB) Concepts Statement No. 6, *Elements of Financial Statements* (that is, believed on the basis of available evidence or logic but is neither certain nor proved). The task force believes that *reasonably expected* connotes a slightly greater than 50 percent chance of occurring.

[3] A research and development (R&D) project is considered to have commenced when more than insignificant costs that qualify as R&D costs in accordance with FASB ASC 730-10 have been incurred.

expected that the reporting entity will use that asset only in a specific IPR&D project that had commenced before the acquisition date.

3.18 Whether an acquired intangible asset to be used in R&D activities (that is, an IPR&D asset) has an alternative future use depends on specific facts and circumstances. Facts and circumstances that suggest the presence of an alternative future use include when it is reasonably expected that the reporting entity will use the intangible asset being acquired in its current condition in another currently identifiable R&D project to be commenced at a future date.

3.19 Facts and circumstances that suggest the absence of an alternative future use include intangible assets that represent incomplete specific IPR&D projects that are narrow in focus and for which the technology involved has the likely potential of being obsolete if the acquired specific IPR&D project fails or is terminated. Those circumstances suggest that if the specific IPR&D project were to be unsuccessful, management of the reporting entity would abandon the specific IPR&D project and direct its future R&D spending to areas using a different technology. Therefore, the specific IPR&D project, as it existed at the date of acquisition, would not have an alternative future use.

3.20 Another example of the absence of an alternative future use is when an entity acquires an intangible asset that is to be used in R&D activities for the sole purpose of holding (locking up) that asset to prevent others from obtaining access to it. Based on the criteria discussed in paragraph 2.10, if an acquired intangible asset will be defending a developed product, the acquired asset would not be considered an IPR&D asset but would be viewed as a defensive intangible asset and would be accounted for in accordance with guidance in paragraphs 5A–5B in FASB ASC 350-30-35. However, if the acquired asset will be defending the value of other intangible assets used in R&D activities, the acquired asset would be considered an IPR&D asset and, in accordance with FASB ASC 805-50-30-3, the entity would be required to allocate cost to such asset based on its relative fair value. However, because such asset is deemed not to have an alternative future use, the entity would expense the allocated cost of this asset.

Questions and Answers—Alternative Future Use

3.21 *Question 1*: Company A acquired two specific IPR&D projects from Company X. Project 1 is a word-processing package to be used in hand-held computing devices, and project 2 is an advanced version of that project that incorporates significant additional features and functionality. Project 2 is dependent on the successful completion of project 1. Is project 2 an alternative future use for project 1?

Answer: No. Because project 2 builds off project 1 and is, therefore, contingent upon successful completion of project 1, the task force believes that it is not an alternative future use for project 1 because project 2 will only use the completed project 1 and, thus, project 2 would not have used project 1 as it existed at the acquisition date. The task force believes that this represents technology migration rather than alternative future use because it is within a product or product family. (For further information on technology migration, see paragraph 6.57 in chapter 6.)

3.22 *Question 2*: Company A acquired a license that gives it the exclusive right to develop and

market a certain compound for the treatment of various diseases. At the time of the acquisition, the compound was in early stage clinical trials as a drug for treating certain cancers. The project met the definition of an asset in FASB Concepts Statement No. 6, *Elements of Financial Statements*, and the additional recognition criteria applicable to specific IPR&D projects because it is incomplete and presumed to have substance because it was the only asset acquired (see chapter 2 for an in-depth discussion of the "used in R&D activities" criteria and recognition criteria applicable to specific IPR&D projects). It is believed the same compound also might be effective in treating a type of cardiovascular disease. The cancer treatment projects were in early stage testing, and human studies for toxicity (safety) of the compound were not yet completed. If the results of those studies are negative, the project will be abandoned, and the compound would not be considered for use in a development project to address cardiovascular disease. Should the potential use of the license rights to the compound for a project addressing cardiovascular disease represent an alternative future use?

Answer: No. The task force believes that studies for toxicity represent a contingency that must be resolved before an alternative future use is reasonably expected to occur. Unless the compound successfully completes the toxicity studies for the indication for cancers, it will not be considered for use in treating any other disease.

3.23 *Question 3*: Company A acquired from custom software Company X certain custom-designed software packages based on specifications provided by Company X's customers. As part of this acquisition, Company A also received the rights to a specific custom software package Company X recently had designed for one of its customers with the intent of externally marketing that software. The custom software package had been programmed to run on a proprietary operating system with interfaces to the customer's legacy systems. Company X intended to modify the software so that it would be integrated into a widely used enterprise resource planning (ERP) package marketed by Company B. Company A planned to pursue a project after the acquisition to modify the Company X software so that it could be integrated into its own ERP software that competes with that of Company B. However, Company A did not plan to pursue modification of the Company X software to work with Company B's package. Is the Company B modification of the software package an alternative future use for the acquired software?

Answer: No. The task force believes that an alternative future use is one that is reasonably expected to occur. Because Company A did not have the intent to pursue the Company B modification of the software package, that potential use, which was the intended use by Company X, is not an alternative future use. Company A would still need to evaluate, however, whether any of the technology represented by the custom version of the software project (*a*) met the definition of an asset in FASB Concepts Statement No. 6, and (*b*) had another alternative future use.

3.24 *Question 4*: In an asset acquisition, Company A acquired from Company X Drug 1, Drug 2, and the development and commercialization rights to a delivery mechanism for the delivery of those drugs. The delivery mechanism has been approved by the U.S. Food and Drug Administration (FDA) for the delivery of Drug 1, and Company X has been selling that product for two years. In addition, prior to the asset acquisition, Company X has commenced clinical

trials for delivery of Drug 2 via the delivery mechanism in anticipation of applying to the FDA for approval for such use. It is expected that significant R&D costs will be incurred to customize the delivery mechanism technology to accommodate the unique characteristics of Drug 2 before obtaining FDA approval for delivery of Drug 2. Those actions are underway and are approximately 50 percent complete, but the FDA has not approved delivery of Drug 2. Does the marketing of the delivery mechanism for delivery of Drug 1 while the project to obtain FDA approval for delivery of Drug 2 is underway constitute an alternative future use for the delivery mechanism?

Answer: No. The characteristics of Drugs 1 and 2 are different, and the design of a delivery mechanism for each drug must reflect those different characteristics. Therefore, the delivery mechanism for Drug 2 will not use the design of the delivery mechanism for Drug 1 as it existed at the transaction date. Company A would still need to evaluate, however, whether the delivery mechanism (*a*) met the definition of an asset in FASB Concepts Statement No. 6, and (*b*) had another alternative future use.

3.25 *Question 5*: Company A licensed from Company X a compound for a new drug with multiple indications. Company A expects that its only use for the compound will be in four currently active IPR&D projects for other indications in addition to the lead indication. Do the four currently active IPR&D projects constitute alternative future uses for the compound?

Answer: No. The licensed compound is expected to be used only in currently active IPR&D projects and not in future IPR&D projects. Therefore, the task force believes that Company A should immediately charge to expense the cost of the license. However, if Company A also had planned future projects (instead of currently active projects) and the future projects were reasonably expected to occur, the planned future project(s) would have been an alternative *future* use, and the allocated cost of the compound would be capitalized, provided there are no other contingencies that must be resolved before an alternative future use is reasonably expected to occur, such as unfinished toxicity studies as discussed in the answer to question 2 in paragraph 3.22.

3.26 *Question 6*: Company A acquired a unique piece of medical testing equipment and reasonably expects that it will use the equipment only in the specific IPR&D project. How should Company A account for the cost of the medical testing equipment?

Answer: Based on guidance in FASB ASC 730-10-25-2 (a), the task force believes that Company A should immediately expense the cost, less salvage value, of the medical testing equipment because the equipment does not have an alternative future use.

Questions and Answers—Miscellaneous

3.27 In addition to the alternative future use topic discussed previously, the task force identified the following questions related to the accounting for asset acquisitions, which are intended to aid in the application of the best practices.

3.28 *Question 1*: *Useful Life and Amortization*: In an asset acquisition, Company A, a

pharmaceutical company, acquired from Company X a library of molecules for high-throughput screening of drug candidates. Company A determined that the library of molecules has alternative future uses because Company A will use portions of the library in its existing specific IPR&D projects, and it is expected that other portions will be used in currently identified future projects. As a result, Company A capitalizes the allocated cost of this library. What life should Company A assign to this library, and when should it begin amortizing the library?

Answer: When determining the useful life of an intangible asset acquired in an asset acquisition for use in R&D activities that has alternative future uses, the reporting entity would need to consider guidance in paragraphs 1–5 of FASB ASC 350-30-35, which discuss determining useful life of an intangible asset. In this fact pattern, because the library is a tool that is completed and being used the way it is intended to be used (that is, in R&D activities), the task force believes that Company A would treat the library as a finite-lived intangible asset and would begin amortizing it immediately. If this library were acquired in a business combination, it might be treated as an indefinite-lived intangible asset until the completion or abandonment of the associated R&D efforts; however, as discussed in paragraph 2.40, the task force believes that such classification would not be representationally faithful. (Please also refer to paragraph 4.82 for further discussion of useful lives.)

3.29 *Question 2*: *"Used in R&D Activities" Criteria and Asset Held for Sale*: Company A acquired the worldwide exploitation rights to Web-based access technology. The rights supported an existing specific IPR&D project to develop a product for exploitation in the United States. Company A does not have the resources to exploit the potential product in foreign countries and, therefore, it reasonably expects that it will sell the exclusive rights to exploitation in countries outside the United States. Assuming that non-U.S. exclusive rights for exploitation meet the recognition criteria, should the allocated cost of the non-U.S. exclusive exploitation rights be capitalized?

Answer: Yes. The expected sale of the non-U.S. exclusive rights for exploitation in foreign countries is an intangible asset because it meets the separability criteria in FASB ASC 805. However, this intangible asset would not meet the "used in R&D activities" criteria (discussed in the "Used in R&D Activities Criteria" section of chapter 2) because Company A plans to outlicense it and does not plan to be actively involved in its development. As a result, this intangible asset would not represent an asset to be used in R&D activities, and the alternative future use criteria would not be applicable in this case. This asset would be recognized as an intangible asset and could potentially be accounted for as an asset held for sale (as discussed further in the "Assets Held for Sale" section of chapter 2). The specific IPR&D project with respect to the development of a product for the U.S. market would also be capitalized provided it had an alternative future use.

3.30 *Question 3*: *Equity Method Investment*: How should an acquirer apply IPR&D accounting requirements to initial investments in common stock that are to be accounted for using the equity method? In this question, it is assumed that the investee does not meet the FASB ASC glossary definition of a *business*. Chapter 2 of this guide addresses a similar situation in which the investee does meet the FASB ASC glossary definition of a *business* (see question 2 in the "Questions and Answers—Miscellaneous" section of chapter 2).

Answer: FASB ASC 323, *Investments—Equity Method and Joint Ventures*, requires that the difference between the cost of an investment and the amount of underlying equity in net assets of an investee be accounted for as if the investee were a consolidated subsidiary. Therefore, the task force believes that if the equity method investee does not meet the definition of a *business* and a portion of the equity investor's acquisition price paid in excess of the underlying equity in net assets is attributable to IPR&D of the investee, the cost allocated to acquired intangible assets to be used R&D activities would need to be expensed unless the assets have an alternative future use.

Chapter 4

Subsequent Accounting for Acquired Intangible Assets That Are to Be Used in Research and Development Activities

Introduction

4.01 This chapter provides guidance on subsequent accounting for acquired intangible assets that are used in research and development (R&D) activities (subsequently referred to as *in-process R&D [IPR&D] assets*). This chapter primarily focuses on subsequent accounting for IPR&D assets acquired in a business combination. Subsequent accounting for IPR&D assets acquired in an asset acquisition is discussed in the "Additional Considerations for Asset Acquisitions" section of this chapter.

Business Combinations

4.02 In a business combination, acquired IPR&D assets are initially recognized at fair value using market participant assumptions and classified as indefinite-lived intangible assets until the completion or abandonment of the associated R&D efforts. In this chapter, these indefinite-lived intangible assets are subsequently referred to as *indefinite-lived IPR&D assets*.

4.03 Following the business combination and before indefinite-lived IPR&D assets are ready for their intended use, they should be tested for impairment annually under Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 350-30, unless there are events or changes in circumstances that could trigger the requirement of a more frequent impairment test.

4.04 In addition, in periods subsequent to the business combination, management may (1) continue internal R&D efforts associated with the assets, including in a modified manner, (2) collaborate with another party in R&D efforts, (3) dispose of the assets through sale, (4) outlicense the assets, (5) decide to temporarily postpone further development, or (6) abandon R&D efforts. These assets may be subject to different subsequent accounting treatment depending on the course of action chosen by management with respect to those assets. Readers should refer to applicable accounting literature when determining the appropriate accounting in each situation.

4.05 R&D expenditures related to the acquired indefinite-lived IPR&D assets and incurred subsequent to the business combination or outside a business combination are generally expensed as incurred unless they represent costs of materials, equipment, or facilities that have alternative future uses.

4.06 After the completion of an IPR&D project, the reporting entity would need to determine the useful life of the asset resulting from R&D activities. Such assets would generally have a finite useful life. However, prior to changing their life from indefinite to finite, these assets

should be tested for impairment under FASB ASC 350-30 as if they were still indefinite-lived. Once these assets are assigned finite life, they should be amortized. Thereafter, assets resulting from R&D activities will be tested for impairment under FASB ASC 360, *Property, Plant, and Equipment*, only when events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable.

4.07 The following table highlights some differences in the accounting for indefinite-lived IPR&D assets and assets resulting from R&D activities acquired in a business combination:

	Indefinite-lived IPR&D asset	**Asset resulting from R&D activities**
Amortization period	N/A	Period over which the asset is expected to contribute directly or indirectly to the future cash flows of the entity.
Method of amortization	N/A	Reflects the pattern in which economic benefits of the intangible asset are consumed or otherwise used up. If that pattern cannot be reliably determined, a straight-line amortization method should be used.
Model and timing for impairment testing	Test for impairment in accordance with paragraphs 18–20 of FASB ASC 350-30-35.	Test for impairment in accordance with paragraphs 17–35 of FASB ASC 360-10-35.
	Testing required annually or more frequently if events or changes in circumstances indicate that the asset might be impaired. Testing for impairment once the associated R&D efforts are completed or abandoned and, therefore, the indefinite-lived IPR&D asset is determined to have a finite life.	Testing required whenever events or changes in circumstances indicate that the carrying amount of an asset resulting from R&D activities (asset group) may not be recoverable.
	Impairment loss is recognized if the carrying amount of the asset exceeds its fair value (one-step test).	Impairment loss is recognized if the carrying amount of the asset is not recoverable and exceeds its fair value (two-step test).

4.08 Several important accounting considerations exist related to indefinite-lived IPR&D assets and assets resulting from R&D activities. They include (1) when to test for impairment, (2) which impairment model to follow, (3) disposal of assets other than by sale, (4) attribution, and (5) tax considerations.

4.09 This chapter discusses the accounting considerations that result from the decision by management to continue internal R&D efforts associated with the asset (including in a modified manner), dispose of the asset through sale, outlicense the asset, temporarily postpone further development, or abandon R&D efforts associated with the project.

Accounting for Indefinite-Lived IPR&D Assets

Impairment Testing of Indefinite-Lived IPR&D Assets[1]

4.10 Certain developments and events after a business combination may result in a decrease in the value of indefinite-lived IPR&D assets, potentially leading to impairment. Depending on the affected assets and the circumstances, accounting principles generally accepted in the United States of America (U.S. GAAP) provide guidance on when to test for impairment, how to determine whether impairment should be recognized, and how to measure and record such impairment in the financial statements. The IPR&D Task Force (task force) also would not generally expect impairment of acquired indefinite-lived IPR&D assets immediately after the acquisition.

When to Test Indefinite-Lived IPR&D Assets for Impairment

4.11 Indefinite-lived IPR&D assets should be tested for impairment as indefinite-lived intangible assets under guidance in paragraphs 18–20 of FASB ASC 350-30-35 annually, or more frequently if events or changes in circumstances indicate the assets might be impaired. Although FASB ASC does not explicitly require it, entities with indefinite-lived IPR&D assets generally select a recurring date for impairment testing purposes.

4.12 *Changes in facts and circumstances.* FASB ASC 360-10-35-21 provides examples of impairment indicators. In addition to considering those examples, the task force recommends that management consider the following indicators specific to their industry:

- Development of a competing drug (generic or branded), product, or technology
- Changes in the legal framework covering patents, rights, or licenses

[1] In September 2011, in response to the feedback received on the goodwill impairment proposal, the Financial Accounting Standards Board (FASB) added a short-term, narrow-scope project to its agenda, the primary objective of which is to simplify the manner in which an entity tests indefinite-lived intangibles assets other than goodwill for impairment. Another objective of this project is to improve the consistency of impairment testing guidance among long-term asset categories. The latest information on the status of this project is available at www.fasb.org/cs/ContentServer?site=FASB&c=FASBContent_C&pagename=FASB%2FFASBContent_C%2FProjectUpdatePage&cid=1176158917333.

- Change in the economic lives of similar assets

- Decision to postpone or delay the development of the IPR&D project

- Regulatory or other developments that could cause either delays in getting the developed product to market or significant additional costs to be incurred (for example, in the case of the pharmaceutical and life sciences industry, a requirement to conduct additional clinical trials)

- An increase in the projected technological risk of completion for the IPR&D project

- A decrease in the projected technological contribution of the IPR&D project to the overall future product, if the IPR&D project is a component of it

- A decrease in the projected market size for the developed product, reflected by a downward revision to the projected revenue or operating margin for the developed product (for example, in the case of the pharmaceutical and life sciences industry, indications that the potential patient population may be significantly smaller than originally anticipated)

- In the case of the pharmaceutical and life sciences industry, failure of the drug's efficacy after a mutation in the disease that it is supposed to treat

- In the case of the pharmaceutical and life sciences industry, advances in medicine or technology, or both, that affect the medical treatments

- In the case of the pharmaceutical and life sciences industry, changes in anticipated pricing or third-party payer reimbursement that cause a significant change to expected revenues

- In the case of the software and electronic device industry, an overall change in the road map for existing, in-process, and future products

4.13 *Completion or abandonment of the associated R&D efforts.* Based on guidance in FASB ASC 350-30-35-17A, completion or abandonment of the associated R&D efforts would generally cause the indefinite-lived IPR&D asset to become a finite-lived asset (that is, asset resulting from R&D activities). Consistent with FASB ASC 350-30-35-17A, prior to commencing amortization of this asset, the entity should test it for impairment as an indefinite-lived intangible asset. The asset should then be amortized over its estimated useful life and accounted for in the same manner as other intangible assets subject to amortization (including applying the impairment provisions of FASB ASC 360).

4.14 When testing an indefinite-lived IPR&D asset for impairment upon successful completion of the associated R&D efforts prior to changing its useful life to finite and

commencing amortization, the entity may wish to consider the following factors to determine the extent of the impairment analysis:

a. Has the indefinite-lived IPR&D asset changed significantly since the most recent fair value determination? When evaluating whether the indefinite-lived IPR&D asset has changed significantly, it might be helpful to consider whether there have been any positive or negative developments with the project (for example, new data has become available, drug efficacy has changed, safety issues have emerged, technology relevance has changed, and so forth).

b. Has the most recent fair value determination resulted in an amount that exceeded the carrying amount of the indefinite-lived IPR&D asset by a substantial margin?

c. Based on an analysis of events that have occurred and circumstances that have changed since the most recent fair value determination, is it remote that a current fair value determination would be less than the current carrying amount of the indefinite-lived IPR&D asset?

The Impairment Model for Indefinite-Lived IPR&D Assets

4.15 The impairment test for an indefinite-lived IPR&D asset consists of a comparison of the asset's fair value with its carrying amount. If the carrying amount exceeds its fair value, an impairment loss equal to that excess is recognized. The carrying amount of the indefinite-lived IPR&D asset is reduced by the impairment loss, and the adjusted amount becomes the asset's new basis. Subsequent reversal of a previously recognized impairment loss is prohibited.

4.16 *Determining the fair value portion of the impairment calculation.* The fair value of the indefinite-lived IPR&D asset, for purposes of impairment testing, should be determined under the framework of FASB ASC 820, *Fair Value Measurement*. The task force also recommends following the guidance outlined in chapter 6 of this guide. When determining the fair value of an indefinite-lived IPR&D asset, it is important to revisit all assumptions used in measuring the indefinite-lived IPR&D asset at the time of acquisition (such as likely market participants, prospective financial information [PFI], discount rates, and so forth), as well as evaluate and consider new and updated data and information available.

4.17 In most circumstances, the valuation methodology used to measure the indefinite-lived IPR&D asset at the time of acquisition is also used for purposes of estimating the fair value for impairment testing. However, it is important to consider any recent information and developments that may result in another valuation methodology being more appropriate given the circumstances.

4.18 For example, the multiperiod excess earnings method may have been used to estimate the fair value of the indefinite-lived IPR&D asset at the time of acquisition. Since then, a similar technology with comparable economic rights has been introduced and licensed in the marketplace for which royalty information is available. Under these circumstances, it is important to consider whether a change in valuation methodology may be warranted.

4.19 If assets are combined for impairment testing, it might be helpful to follow guidance in chapter 6 for such valuation matters as PFI, *expected cash flows*, and discount rate determination.

4.20 *Classifying an impairment loss related to indefinite-lived IPR&D assets.* FASB ASC 350-30-45-2 provides that an impairment loss that an entity recognizes for an indefinite-lived intangible asset should be reported as a component of income from continuing operations. The impairment loss is included in the subtotal "income from operations" if presented.

Abandoning of the Associated R&D Efforts

4.21 This section does not address defensive IPR&D assets, which are discussed in chapter 2. FASB ASC 350-30-35-17A provides that intangible assets acquired in a business combination that are used in R&D activities (regardless of whether they have an alternative future use) should be considered indefinite-lived until the completion or abandonment of the associated R&D efforts. Although FASB ASC 360 is applicable to finite-lived assets, the task force believes that this topic provides useful guidance that may be helpful to consider when assessing whether R&D efforts are either abandoned or temporarily idled. FASB ASC 360-10-35-47 provides that "a long-lived asset to be abandoned is disposed of when it ceases to be used." Further, FASB ASC 350-30-35-17A indicates that consistent with the guidance in FASB ASC 360-10-35-49, intangible assets acquired in business combination that have been temporarily idled should not be accounted for as if abandoned.

4.22 The task force believes that determination of whether R&D efforts are abandoned or temporarily idled is a matter of judgment and depends on specific facts and circumstances. When making that determination, the task force believes the following factors may indicate that R&D efforts are abandoned. Existence of any one of these factors may not be determinative. The following list is not meant to be all inclusive; there may be other factors to consider:

- Management ceases maintaining or using the indefinite-lived IPR&D asset.
- Management makes a permanent decision to stop funding the project (internally or through external sources).
- Management does not have an intention to sell the indefinite-lived IPR&D asset.

4.23 The task force believes that writing off an indefinite-lived IPR&D asset immediately after a business combination would generally be rare. As time progresses and circumstances and events change, value associated with indefinite-lived IPR&D assets that management does not intend to use may diminish. However, it should be noted that an IPR&D asset could be written off after the acquisition date as part of a measurement period adjustment due to facts and circumstances that existed at the acquisition date (see question 3, "*Impact of Decision to Abandon R&D Efforts on Recognition and Measurement of the Associated R&D Project*" in paragraph 2.71 for further discussion.)

4.24 If an entity plans to cease R&D efforts associated with an indefinite-lived IPR&D asset, the entity should test the asset for impairment under FASB ASC 350-30. The entity should then

determine the useful life of this asset in accordance with FASB ASC 350-30-35. If it is determined that the asset no longer has an indefinite life, it should be amortized based on its estimated useful life, which is likely to be relatively short given the entity's plans to abandon the associated R&D efforts. It stands to reason that the longer something is not being developed, the more market participant assumptions converge with entity-specific assumptions (that is, at some point, what an entity does with an asset will affect what a market participant could or would do with the asset). The point at which this occurs is highly judgmental and more of an evolution over time rather than a particular point in time.

4.25 FASB ASC 360-10-45-15 requires that long-lived assets to be disposed of other than by sale (for example, by abandonment) continue to be classified as held and used until disposal.

4.26 Chapter 2 includes an example that addresses the impact of decision to abandon R&D efforts on recognition and measurement of the associated R&D project (see question 3 in the "Questions and Answers—Miscellaneous" section of chapter 2.)

Outlicensing Arrangements

4.27 A transferor, such as a pharmaceutical company, may subsequently enter into an arrangement whereby it transfers (outlicenses) its rights to a previously identified and measured indefinite-lived IPR&D asset to a third party (transferee). The intangible asset transferred is commonly known as the *outlicensed asset*. Often, such arrangements involve the transferee making an initial nonrefundable payment and committing to make future (contingent) payments based upon achieving substantive development milestones and royalties based on future sales of the product that is expected to utilize the outlicensed asset. In the event that the development efforts of the transferee are unsuccessful, the rights initially transferred commonly revert to the transferor.

4.28 Commonly, the amount of the initial fixed nonrefundable payment is less than the carrying amount (and current fair value) of the outlicensed asset. The task force has considered whether the transferor should (1) derecognize the carrying amount of the outlicensed asset in situations in which it is determined to constitute a sale under U.S. GAAP, and, (2) if so, whether it is appropriate for the transferor to recognize a loss in circumstances in which the total amount of noncontingent consideration is less than the carrying amount of the outlicensed asset. The task force has discussed this issue at length and ultimately decided not to provide specific guidance in this guide. However, this issue is expected to be addressed in the joint revenue recognition project.[2] Readers should be alert to further developments on this issue.

[2] FASB and the International Accounting Standards Board are currently working on a joint revenue recognition project. An exposure draft of the proposed revenue recognition standard was originally issued in June 2010. However, it is expected to be reexposed in 2011 to provide interested parties with an opportunity to comment on revisions that have been made since the publication of the exposure draft in June 2010. With respect to the issue of outlicensing arrangements discussed previously, the 2011 planned reexposure draft is expected to include a question for respondents regarding variable consideration. The issue of intellectual property is also expected to be considered during the projects planned outreach.

Accounting for Assets Resulting From R&D Activities

Overview

4.29 Once management determines that an R&D project acquired in a business combination is completed and the related IPR&D asset is ready for its intended use, the asset is no longer considered an IPR&D asset; it now represents an asset resulting from R&D activities for which the management would need to determine its useful life. Such assets would generally have a finite useful life. Before commencing amortization of these assets, they should be tested for impairment as indefinite-lived assets in accordance with FASB ASC 350-30. Then they should be amortized prospectively over their estimated useful life and accounted for similar to other intangible assets that are subject to amortization.

Completion and Readiness for Its Intended Use

4.30 Determining when an R&D project is completed and the resulting asset is ready for its intended use depends on the industry and the specific facts and circumstances. Chapter 2 of this guide discusses the concept of *incompleteness*, which would be viewed as the opposite of *completeness*. Paragraph 2.17 states that "[i]ncompleteness means there are remaining risks (for example, technological or engineering) or certain remaining regulatory approvals at the date of acquisition. Overcoming those risks or obtaining the approvals requires additional R&D costs be incurred." Therefore, generally, an R&D project would be viewed as completed when there are no remaining technological or engineering risks.

4.31 Also, when determining whether an R&D project is completed, entities should consider if there are any regulatory or other requirements that are necessary to consider the resulting asset ready for its intended use. For example, pharmaceutical companies operate in a regulated environment and may conclude that the R&D project is no longer in-process at the point when regulatory approval of the drug is obtained. Given that pharmaceutical companies are unique in that they require regulatory approval in a respective territory, the task force believes that entities should consider the unit of account when making a determination of when the R&D project is completed and the resulting asset is ready for its intended use. (See the "Unit of Account" section in chapter 2.) The task force believes that if the unit of account is the global compound, the asset is considered to be ready for its intended use upon receiving an approval in one or more jurisdictions, which, individually or combined, are expected to generate a significant portion of the total revenue or cash flows expected to be earned for that compound.

4.32 When determining whether the R&D project is completed, entities may find it helpful to consider guidance in the "Specific IPR&D Projects—Incompleteness" section in chapter 2, specifically factors listed in paragraph 2.60.

The latest information on the status of this joint project is available at www.fasb.org/cs/ContentServer?c=FASBContent_C&pagename=FASB%2FFASBContent_C%2FProjectUpdatePage&cid=9000000011146.

4.33 Also, FASB ASC 730-10-55-1 provides examples of activities that would typically be considered R&D, whereas FASB ASC 730-10-55-2 provides examples of activities that would not be considered R&D. This guidance may also be helpful to consider when determining whether the project is completed.

Useful Life of Assets Resulting From R&D Activities

4.34 Determining the appropriate useful life and method of amortization for assets resulting from R&D activities requires judgment and understanding the nature of these assets. FASB ASC 350-30-35-1 states that "[t]he accounting for a recognized intangible asset is based on its useful life to the reporting entity." Therefore, estimating the useful life is based on management's expectations, not market participant's expectations; however, these considerations may overlap because the entity is part of the market.

4.35 FASB ASC 350-30-35-2 states that "[t]he useful life of an intangible asset to an entity is the period over which the asset is expected to contribute directly or indirectly to the future cash flows of that entity." Consistent with FASB ASC 350-30-35-9, the remaining useful life of an asset resulting from R&D activities should be evaluated each reporting period to determine whether events and circumstances warrant a revision to the remaining period of amortization. If the estimate of the remaining useful life is changed, the remaining carrying amount of the asset resulting from R&D activities should be amortized prospectively over that revised remaining useful life.

4.36 For purposes of evaluating the amortization period, FASB ASC 350-30-35 is silent regarding whether the reporting period is an annual period, an interim period, or both. The task force believes that consistent with other requirements in FASB ASC 350-30, it is reasonable to interpret the reference to reporting period to mean annual reporting periods. Therefore, absent some triggering event, such as a change in intended use, the task force believes that it would be appropriate to evaluate the useful lives of assets resulting from R&D activities at least annually.

4.37 When determining the useful life of an asset resulting from R&D activities, an entity should consider all pertinent factors, including the following factors discussed in FASB ASC 350-30-35-3:

- The expected use of the asset by the entity
- The expected useful life of another asset, or a group of assets, to which the useful life of the intangible asset may relate
- Any legal, regulatory, or contractual provisions that may limit the useful life
- The effects of obsolescence, demand, competition, and other economic factors (such as the stability of the industry, known technological advances, legislative action that results in an uncertain or changing regulatory environment, and expected changes in distribution channels)

4.38 Management should also consider other factors relevant to the entity's industry when determining the useful life of an asset resulting from R&D activities. For example, in addition to the factors listed previously, it may be helpful to consider the following factors:

- Duration of the patent right or license of the product
- Redundancy of the product because of changes in market preferences or development of a similar product
- Impact of bad publicity on the product
- Unfavorable court decisions on claims from product users
- Regulatory decisions over licenses
- Environmental changes that make the product ineffective or obsolete
- Changes or anticipated changes in how the reporting entity gets compensated for the product
- Changes in government policies

Amortization of Assets Resulting From R&D Activities

Amortization Method

4.39 After estimating the useful life of an asset resulting from R&D activities, an entity needs to determine the appropriate method of amortization. FASB ASC 350-30-35-6 provides that the method of amortization should reflect the pattern in which the economic benefits of the intangible asset are consumed or otherwise used up. If that pattern cannot be reliably determined, a straight-line amortization method should be used.

4.40 The entity would need to consider the nature of the asset resulting from R&D activities and its expected use when evaluating if a pattern of consumption can be reliably determined or if the straight-line method of amortization should be used.

4.41 As was explained in paragraph B54 of FASB Statement No. 142, *Goodwill and Other Intangible Assets*,[3] when considering the methods of amortization, the FASB board noted that Accounting Principles Board Opinion No. 17, *Intangible Assets* (which was superseded by FASB Statement No. 142), required that a straight-line method be used to amortize intangible assets

[3] This explanation is based on paragraph B54 of FASB Statement No. 142, *Goodwill and Other Intangible Assets*. Paragraph B54 of FASB Statement No. 142 was not codified in the FASB *Accounting Standards Codification*™ (ASC); however, the task force believes that it provides helpful guidance and, therefore, decided to incorporate it in this guide.

unless another method was demonstrated to be more appropriate. However, FASB also noted that circumstances may exist in which another method may be more appropriate, such as in the case of a license that entitles the holder to produce a finite quantity of product. FASB, therefore, concluded that the amortization method adopted should reflect the pattern in which the asset is consumed if that pattern can be reliably determined, with the straight-line method being used as a default.

4.42 Although the example of a license that permits production of a finite quantity of product provided in paragraph B54 of FASB Statement No. 142 may illustrate a reliably determinable pattern of consumption, other situations may not be as clear. For instance, if the license instead allowed for unlimited production over a finite period, it is not clear whether the asset should be viewed as consumed on the basis of the estimate of production or on the basis of a lapse in time (because the holder of the right has unlimited access throughout the license period).

4.43 Therefore, when determining the appropriate method of amortization, entities would need to evaluate specific facts and circumstances and consider whether the assets are consumed over time or as units are produced. The task force observes that in situations in which there is a significant level of uncertainty involved in determining the pattern in which the economic benefits of an asset resulting from R&D activities are consumed, the straight-line method is often used in practice to amortize such assets.

4.44 For example, pharmaceutical companies generally determine that the straight-line method of amortization best reflects the pattern in which assets resulting from R&D activities are consumed because their intangible assets are time based. Pharmaceutical companies generally derive most value from their products over the patent life, not as units are produced. Said differently, the value of an asset resulting from R&D activities does not diminish as one unit is produced. The value of the asset resulting from R&D activities diminishes as time passes and the branded drug draws closer to patent expiry and exposure to generic competition.

4.45 Electronic devices and software companies also typically attribute the decrease in value of assets resulting from R&D activities to time passage and the technology itself becoming outdated. As a result, these industries also generally use straight-line method of amortization for assets resulting from R&D activities.

Changes in Amortization Methods

4.46 Consistent with guidance in paragraph 18–19 of FASB ASC 250-10-45, a change from one amortization method to another may be made only if the new method is justifiable on the basis that it is preferable. Such change reflects a change in accounting estimate that is effected by a change in accounting principle. For Securities and Exchange Commission (SEC) registrants, section 4230.2(c)(4) of the SEC's Financial Reporting Manual indicates that such change does not require a preferability letter.

Impairment Testing of Assets Resulting From R&D Activities

4.47 Assets resulting from R&D activities should be tested for impairment as long-lived assets in accordance with guidance in FASB ASC 360-10. There are two impairment models under FASB ASC 360-10: (1) for assets classified as "held and used," and (2) for assets classified as "held for sale." As provided in FASB ASC 360-10-45-15, an asset to be abandoned should continue to be classified as held and used until it is disposed of, and the guidance on long-lived assets to be held and used should apply while the asset is classified as such. FASB ASC 360-10-35-47 provides that "a long-lived asset to be abandoned is disposed of when it ceases to be used." Therefore, assets to be abandoned should be tested for impairment as held and used assets until they cease to be used.

4.48 If management has not reached a final decision on the sale or the criteria described in FASB ASC 360-10-45-9 for classification as held for sale have not been otherwise met, the asset should be classified as held and used. For instance, management may be exploring a number of potential alternatives, including continuing to use the asset in a modified manner, abandoning the asset, exclusively licensing the asset, or disposing of the asset through sale.

4.49 The following chart depicts the impairment models based on the type and intended use of the assets:

Held and used	**Held for sale**
Event-driven, two-step test at asset (asset group) level	Lower of carrying amount or fair value less cost to sell the asset (disposal group)

Impairment Testing of Held and Used Assets Resulting From R&D Activities

4.50 Assets resulting from R&D activities that an entity plans to hold and use should be reviewed for impairment in accordance with guidance in paragraphs 17–35 of FASB ASC 360-10-35. Consistent with guidance in FASB ASC 360-10-35, assets resulting from R&D activities are subject to a two-step approach and should be tested for recoverability at the asset (asset group) level whenever events or changes in circumstances indicate that their carrying amounts may not be recoverable.

4.51 In step 1, the entity tests the asset (asset group) for recoverability by comparing its carrying amount with the sum of undiscounted cash flows expected to result from the use and eventual disposition of the asset (asset group). If the sum of undiscounted cash flows exceeds the carrying amount of the asset (asset group), the asset (asset group) is not impaired. If the sum of undiscounted cash flows is less than the carrying amount of the asset (asset group), then step 2 is performed, which compares the fair value of the asset (asset group) to its carrying amount. The excess of the carrying amount of the asset (asset group) over its fair value, if any, would be

recognized as an impairment loss. With respect to an asset group, based on guidance in FASB ASC 360-10-35-28, the impairment loss should be allocated to the long-lived assets of the group on a pro rata basis using the relative carrying amounts of those assets, except that the loss allocated to an individual long-lived asset of the group should not reduce the carrying amount of that asset below its fair value whenever that fair value is determinable without undue cost and effort.

4.52 *When to test for impairment held and used assets resulting from R&D activities.* An asset resulting from R&D activities or asset group that is held and used should be tested for recoverability whenever events or changes in circumstances indicate that its carrying amount may not be recoverable. FASB ASC 360-10-35-21 provides examples of such events or changes in circumstances that may indicate the carrying amounts may not be recoverable. In addition to considering those examples, the task force recommends that management consider industry-specific indicators, such as the ones described in the "When to Test Indefinite-Lived IPR&D Assets for Impairment" section of this chapter.

4.53 Consistent with FASB ASC 360-10-35-22, when the asset (asset group) is tested for recoverability, it also may be necessary to review amortization estimates and method as required by FASB ASC 250, *Accounting Changes and Error Corrections*, or the amortization period as required by FASB ASC 350, *Intangibles—Goodwill and Other*. Any revision to the remaining useful life of the asset resulting from that review also should be considered in developing estimates of future cash flows used to test the asset (asset group) for recoverability. However, any change in the accounting method for the asset resulting from that review should be made only after performing the impairment test.

4.54 *Asset grouping of held and used assets resulting from R&D activities.* Consistent with FASB ASC 360-10-35-23, for purposes of recognition and measurement of an impairment loss, a held and used asset resulting from R&D activities should be grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. The determination of an entity's asset groups involves significant judgment, and all relevant facts and circumstances should be considered. In making this determination, a number of entity-specific operating characteristics may need to be assessed, including the interdependency of revenue between asset groups.

4.55 The existence of a shared cost structure may also be a factor in the determination of the appropriate level at which to group assets. If cash flows from a particular asset group result from significant shared operations, it may be necessary to group assets at a higher level. However, the existence of shared service activities alone would not necessarily require grouping assets at a higher level because in many instances, these types of services may not be considered significant.

4.56 *Estimating future cash flows used in the recoverability test of held and used assets resulting from R&D activities.* Consistent with FASB ASC 360-10-35-30, estimates of future cash flows used to test the recoverability of a held and used asset resulting from R&D activities (asset group) should incorporate the entity's own assumptions about its use of the asset (asset group) and should consider all available evidence. Therefore, the recoverability test is based on

undiscounted cash flows expected to result from the entity's use and eventual disposition of the asset or asset group, rather than on market participant assumptions that would be used in measuring the asset's fair value. As a result, cash flows used in the recoverability test may be different from the cash flows used in measuring the fair value.

4.57 For example, if an income approach is used to measure the fair value of an asset resulting from R&D activities that is held and used, the cash flows would be based on market participant assumptions, rather than an entity's own assumptions about how it intends to use the asset.

4.58 FASB ASC 360-10-35-30 provides that estimates of future cash flows should be reasonable in relation to the assumptions used in developing other information used by the entity for comparable periods, such as internal budgets and projections, accruals related to incentive compensation plans, or information communicated to others. Additionally, the task force recommends considering expected changes in market conditions when developing assumptions about price and volume levels.

4.59 Estimates of future cash flows include the following:

- All cash inflows expected from the use of the asset resulting from R&D activities or asset group over its remaining useful life, based on its existing service potential at the date of the recoverability test (for example, taking into account the asset's cash flow-generating capacity and physical output capacity, but excluding future capital improvements and other expenditures that would increase the service potential of the asset). For example, cash inflows may include, but are not limited to, revenues from sale of products or services associated with assets resulting from R&D activities or from licensing of those assets.

- Any cash outflows necessary to obtain those cash inflows, including future expenditures to maintain the asset. For example, cash outflows may include, but are not limited to, cost of goods sold, sales and marketing expenses, and maintenance R&D.

- Cash flows associated with the eventual disposition, including selling costs and the salvage value of those assets. If the asset group constitutes a business, the proceeds from eventual disposition may include the terminal value of the business (although such terminal value may be less than that used for business valuation purposes because it would reflect only the value associated with maintaining the existing service potential of the business).

4.60 Based on guidance in FASB ASC 360-10-35-31, the remaining useful life of a group of assets over which cash flows can be considered should be based on the remaining useful life of the "primary asset" of the group. The primary asset is the principal long-lived tangible asset being depreciated or the intangible asset being amortized that is the most significant component asset from which the asset group derives its cash flow-generating capacity.

4.61 Consistent with FASB ASC 360-10-35-32, factors that an entity generally should consider in determining whether an asset resulting from R&D activities is the primary asset of an asset group include the following:

a. Whether other assets of the group would have been acquired by the entity without the asset.

b. The level of investment that would be required to replace the asset.

c. The remaining useful life of the asset relative to other assets of the group. If the primary asset is not the asset of the group with the longest remaining useful life, estimates of future cash flows for the group should assume the sale of the group at the end of the remaining useful life of the primary asset.

4.62 FASB ASC 360-10-35-33 provides that cash flow estimates should include cash flows associated with future expenditures necessary to maintain the existing service potential of the asset or asset group, including those that replace the service potential of component parts of the asset and component assets other than the primary asset of an asset group.

4.63 Consistent with FASC ASC 360-10-35-30, if alternative courses of action to recover the carrying amount of an asset resulting from R&D activities or asset group are under consideration, or if a range is estimated for the amount of possible future cash flows associated with the likely course of action, the likelihood of those possible outcomes should be considered. Therefore, a probability-weighted approach may be useful in considering the likelihood of those possible outcomes. See example 2 in FASB ASC 360-10-55-23 for an illustration of this guidance.

4.64 Whichever method of estimating cash flows is used, it would need to be applied consistently to asset groups with similar uncertainties and cash flow streams. FASB ASC 360-10-35 is silent about whether estimates of expected future net cash flows for the recoverability test should include or exclude income tax effects. Ordinarily, such calculations are performed on a pretax basis. However, there may be unusual situations in which incremental tax effects directly attributable to a specific asset would be considered in assessing an asset's recoverability. Examples might include low income housing tax credits or shale oil tax credits. Such tax attributes would be included in the recoverability test if tax effects are important to the assets' economics.

4.65 *Classifying an impairment loss related to held and used assets resulting from R&D activities.* Based on FASB ASC 360-10-45-4, if an impairment loss is recognized, that loss should be included in income from continuing operations before income taxes and within income from operations, if such an amount is presented.

4.66 Consistent with FASB ASC 350-30-35-14, after recognition of an impairment loss, the adjusted carrying amount of an asset resulting from R&D activities becomes that asset's new accounting basis. FASB ASC 350-30-35-14 also states that "[s]ubsequent reversal of a previously recorded impairment loss is prohibited." Consistent with FASB ASC 360-10-35-20,

the adjusted carrying amount of the asset resulting from R&D activities should be amortized over the asset's remaining useful life.

4.67 *Order of impairment testing for held and used assets resulting from R&D activities.* If assets resulting from R&D activities are tested for impairment at the same time with other assets of a reporting unit, including goodwill that is being tested for impairment, consistent with FASB ASC 360-10-35-27, the impairment testing should be performed in the following order:

- Adjust the carrying amounts of any other assets (such as accounts receivable and inventory) and liabilities (such as accounts payable, long-term debt, and asset retirement obligations) that are included in an asset group in accordance with applicable U.S. GAAP. Test for impairment and adjust carrying amounts of indefinite-lived intangible asset(s) that are included in an asset group under FASB ASC 350-30.

- Test long-lived assets (asset group) and amortizable intangible assets, including assets resulting from R&D activities, under FASB ASC 360-10.

- Test goodwill of a reporting unit that includes the aforementioned assets under FASB ASC 350-20.

4.68 The carrying values are adjusted, if necessary, for the result of each test prior to performing the next test. This order differs from the held-for-sale approach (which is discussed in paragraphs 4.73–4.75), which prescribes that goodwill be tested for impairment prior to the disposal group. The order of assessment may affect the recorded amount of goodwill impairment loss.

4.69 *Allocating impairment loss for held and used assets resulting from R&D activities.* Consistent with FASB ASC 360-10-35-28, an impairment loss for an asset group should reduce only the carrying amounts of an asset resulting from R&D activities or assets of the group. The loss should be allocated to the long-lived assets of the group on a pro rata basis using the relative carrying amounts of those assets, except that the loss allocated to an individual long-lived asset of the group should not reduce the carrying amount of that asset below its fair value whenever that fair value is determinable without undue cost and effort. See example 1 in FASB ASC 360-10-55-20 for an illustration of this guidance.

Impairment Testing of Held for Sale Assets Resulting From R&D Activities

4.70 *Criteria for classifying assets resulting from R&D activities or disposal groups as held for sale.* Consistent with FASB ASC 360-10-45-9, an entity must meet all of the following criteria to classify an asset resulting from R&D activities (disposal group) to be sold as held for sale:

- Prior to the date of the financial statements, management, having the authority to approve the action, commits to a plan to sell the asset (disposal group).

- The asset (disposal group) is available for immediate sale in its present condition subject only to terms that are usual and customary for sales of such assets (disposal groups). In other words, there is no operational requirement to use the asset.

- An active program to locate a buyer and other actions required to complete the plan to sell the asset (disposal group) have been initiated.

- The sale of the asset (disposal group) is probable (the term *probable* refers to a future sale that is likely to occur), and transfer of the asset (disposal group) is expected to qualify for recognition as a completed sale within one year, except as permitted by FASB ASC 360-10-45-11.

- The asset (disposal group) is being actively marketed for sale at a price that is reasonable in relation to its current fair value.

- Actions required to complete the plan indicate that it is unlikely that significant changes to the plan will be made or that the plan will be withdrawn.

4.71 If an entity meets all of the preceding criteria, the asset resulting from R&D activities or the related disposal group should be classified as held for sale. Consistent with FASB ASC 360-10-35-43, such asset should not be amortized while it is classified as held for sale.

4.72 *Impairment model for held for sale assets resulting from R&D activities.* Consistent with FASB ASC 360-10-35-43, an asset resulting from R&D activities (disposal group) classified as held for sale should be measured at the lower of its carrying amount or fair value less cost to sell.[4] Consistent with FASB ASC 360-10-35-40, an impairment loss should be recognized for any initial or subsequent write-down of the asset or disposal group to its fair value less cost to sell. A gain should be recognized for any subsequent increase in fair value less cost to sell of an asset resulting from R&D activities or disposal group, but not in excess of the cumulative loss previously recognized. That is, the asset resulting from R&D activities or disposal group should not be written up above its carrying amount as of its classification as held for sale.

4.73 *Order of impairment testing for held for sale assets resulting from R&D activities.* In accordance with FASB ASC 360-10-35-39, the carrying amounts of any assets not covered by this FASB ASC subtopic, including indefinite-lived intangible assets and goodwill, that are included in a disposal group classified as held for sale should be adjusted in accordance with other applicable U.S. GAAP prior to measuring the fair value less cost to sell of the disposal group. An entity should perform impairment testing in the following order:

[4] It should be noted that FASB ASC 820-10-15-1 indicates that measurements based on fair value, such as fair value less cost to sell, are within the scope of FASB ASC 820, *Fair Value Measurement*, and, therefore, subject to its measurement and disclosure requirements. Specifically, FASB ASC 820-10-50-2 uses an asset held for sale that is measured at fair value less costs to sell as an example of a *nonrecurring fair value measurement.* Paragraphs 1–2 of FASB ASC 820-10-50 contain a number of disclosure requirements for nonrecurring fair value measurements and FASB ASC 820-10-55-100 provides a disclosure example that includes, among other things, disclosures related to nonrecurring fair value measurements.

- Adjust the carrying amounts of any other assets (such as accounts receivable and inventory) that are included in a disposal group in accordance with other applicable U.S. GAAP. Test for impairment and adjust carrying amounts of indefinite-lived intangible asset(s) that are included in the disposal group under FASB ASC 350-30.

- Test goodwill for impairment under FASB ASC 350-20 if it is included in a disposal group. (Paragraphs 51–57 of FASB ASC 350-20-35 provide guidance for allocating goodwill to a lower-level asset group to be disposed of that is part of a reporting unit and that constitutes a business. Goodwill is not included in a lower-level asset group to be disposed of that is part of a reporting unit if it does not constitute a business.)

- Test the disposal group for impairment under FASB ASC 360-10.

4.74 The carrying values are adjusted, if necessary, for the result of each test prior to performing the next test. This order is different from that applied for assets to be held and used as discussed in paragraphs 4.67–4.68. The order of assessment may affect the amount of goodwill impairment loss.

4.75 According to FASB ASC 360-10-35-40, the expected disposal loss or gain should adjust only the carrying amount of a long-lived asset, whether classified as held for sale individually or as part of a disposal group.

Income Tax Considerations

Valuation Allowance Assessments

4.76 In situations in which a deferred tax liability related to an indefinite-lived IPR&D asset is recorded, it is important to consider when performing a valuation allowance assessment whether the deferred tax liability should be used as a source of income to realize a benefit from deferred tax assets. Deferred tax liabilities related to indefinite-lived assets typically cannot be used as a source of income to support realization of deferred tax assets in jurisdictions where tax attributes expire (such as in jurisdictions where net operating loss carryforwards expire) unless the deferred tax liability is expected to reverse prior to the expiration date of the tax attribute. In evaluating the need for a valuation allowance on deferred tax assets, a reporting entity would need to consider whether the deferred tax liabilities related to indefinite-lived IPR&D assets are expected to reverse in a period that would allow realization of the deferred tax assets.

Questions and Answers—Valuation Allowance Assessments

4.77 *Question*: Company A acquires Company X in a nontaxable business combination on January 1. As part of acquisition accounting, Company A capitalizes an acquired indefinite-lived IPR&D asset for $100 and records an associated deferred tax liability of $40. Company A plans to file a consolidated tax return with Company X. Company A had a preexisting deferred tax asset of $30 for net operating loss that will expire in 10 years (for simplicity, assume this is Company A's only deferred tax asset). Prior to the acquisition, Company A had a valuation allowance against the deferred tax asset. Can the deferred tax liability related to the indefinite-

lived IPR&D asset be used as a source of taxable income to provide realization of the deferred tax asset?

Answer: To determine whether the deferred tax liability related to the indefinite-lived IPR&D asset can be used as a source of taxable income to provide realization of the deferred tax asset, Company A would need to assess how long it would take to complete the IPR&D project and the expected useful life of the asset resulting from R&D activities that will be produced by this project once the project is complete. If Company A expects the project to be completed within two years and expects the useful life of the asset resulting from R&D activities to be three years, then the deferred tax liability would be used as a source of realization for the deferred tax asset because the deferred tax liability is expected to reverse over years three to five, which is well before the expiration of the net operating loss carryforward. If Company A reverses all or a portion of its valuation allowance as a result of this analysis, the benefit would be recorded outside acquisition accounting in income from continuing operations.

Alternatively, if Company A has limited or no visibility into how long the IPR&D project may last or the useful life of the asset resulting from R&D activities that will be produced by this IPR&D project, or both, then the reversal of the taxable temporary difference might not provide a source of taxable income for tax attributes with expiration periods.

Identifying the Applicable Tax Rate to Calculate Deferred Tax Assets and Liabilities

4.78 In determining deferred taxes, the identification of the applicable tax rate for each jurisdiction (and sometimes for each individual type of temporary difference) is important. When determining the applicable tax rate, it is necessary to consider the effects of the business combination. This may be important in situations in which graduated rates were historically significant for the entity because the combined entity's operations may require the application of a different statutory rate. The applicable rate is determined based on enacted tax rates, even if the parties included apparent or expected changes in tax rates in their negotiations. FASB ASC 740-10-25-47 requires that rate changes be reflected in the period when enacted. Further, a change in enacted rates subsequent to the acquisition date may result in an immediate positive or negative impact on the tax provision in the postcombination period. Reporting entities that file financial statements with the SEC may be required to apply push-down accounting, whereby the parent's basis in the investment is pushed down to the legal entities acquired. Regardless of whether push-down accounting is applied, the applicable tax rate(s) used to measure deferred taxes would be determined based on the relevant rate(s) in the jurisdictions where the acquired assets are recovered and the assumed liabilities are settled.

Additional Considerations for Asset Acquisitions

4.79 Chapter 3 sets forth what the task force believes are best practices in the accounting for assets acquired in an asset acquisition that are to be used in R&D activities. Additionally, that chapter highlights differences in accounting for assets used in R&D activities acquired in business combinations and those acquired in asset acquisitions.

4.80 With respect to subsequent accounting for assets acquired and liabilities assumed in asset acquisitions, FASB ASC 805-50-35-1 provides that "After the acquisition, the acquiring entity accounts for the asset or liability in accordance with the appropriate generally accepted accounting principles (GAAP). The basis for measuring the asset acquired or liability assumed has no effect on the subsequent accounting for the asset or liability."

4.81 Subsequent accounting for an IPR&D asset acquired in an asset acquisition will depend on the conclusion reached regarding the alternative future use of the asset. If no alternative future use is identified for an asset acquired in an asset acquisition, the asset is expensed immediately, and there is no further accounting. If however, an alternative future use is identified for the asset acquired in an asset acquisition, then the asset would be capitalized as an IPR&D asset.

4.82 Once capitalized, the entity needs to determine useful life of an IPR&D asset acquired in an asset acquisition in accordance with paragraphs 1–5 of FASB ASC 350-30-35, which provide guidance on determining useful life of an intangible asset. As a result, IPR&D assets acquired in an asset acquisition may be either finite- or indefinite-lived. However, given the nature of IPR&D assets acquired in asset acquisitions that meet the capitalization criteria, the task force believes that situations in which a capitalized IPR&D asset would be assigned an indefinite life would occur infrequently. This is because in order for an asset used in R&D activities to be capitalized in an asset acquisition, it has to satisfy the alternative future use criterion. Assets that generally meet this criterion are tools used in R&D activities that are completed, being used the way they are intended to be used (that is, in R&D activities), and expected to produce economic benefits for a finite period of time. Typical example of such tools in the pharmaceutical industry would be platform technology, which will allow an entity to develop molecules more quickly or to identify them more efficiently. Accounting for finite-lived IPR&D assets acquired in an asset acquisition would be similar to accounting for finite-lived assets resulting from R&D activities, which is discussed in the "Business Combinations" section of this chapter. However, with respect to amortization, if an IPR&D asset represents a project, it would not be amortized until the R&D project is completed and, if an IPR&D asset represents a tool used in multiple projects, amortization would begin once the asset is completed and is ready for its intended use (see the answer to question 1 in paragraph 3.28 for further discussion of an IPR&D asset that represents a tool). Indefinite-lived IPR&D assets acquired in an asset acquisition would be accounted for in accordance with general guidance in FASB 350-30 for indefinite-lived intangible assets. Accounting for these assets would differ from accounting for indefinite-lived IPR&D assets acquired in a business combination which, in accordance with FASB ASC 350-30-35-17A, are automatically presumed to have an indefinite life until completion or abandonment of the associated R&D efforts. In accordance with FASB ASC 350-30-35-16, the remaining useful life of indefinite-lived IPR&D assets acquired in an asset acquisition would need to be evaluated each reporting period to determine whether events and circumstances continue to support their indefinite useful life. Once these assets are determined to have a finite useful life, the accounting for them would be similar to accounting for assets resulting from R&D activities discussed in the "Business Combinations" section of this chapter; however, they would not be amortized until the R&D project is completed.

Chapter 5

Disclosures of Assets Acquired That Are to Be Used in Research and Development Activities

Business Combinations

5.01 In considering best practices for disclosures related to assets acquired in a business combination to be used in research and development (R&D) activities, the IPR&D Task Force (task force) observed that the disclosures required by accounting principles generally accepted in the United States of America (U.S. GAAP) and, for Securities and Exchange Commission registrants, Regulations S-K and S-X are somewhat limited. For example, Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 805-10-50-1(c) requires that for business combinations that occur during the reporting period, entities disclose the "amounts recognized as of the acquisition date for each major class of assets acquired and liabilities assumed."

5.02 The task force also observes that FASB ASC 805, *Business Combinations*, does not require disclosure of valuation methods and assumptions or qualitative information about assets acquired. The required disclosures for a business combination are addressed in FASB ASC 805-10-50, FASB ASC 805-20-50, FASB ASC 805-30-50, and FASB ASC 805-40-50.

5.03 In determining whether reporting entities should provide additional disclosures about in-process R&D (IPR&D), the task force identified the following general considerations:

- Financial statement disclosures need to be provided only about items that are qualitatively or quantitatively material—individually or in the aggregate.

- Disclosures about IPR&D should be considered in the context of the financial statements as a whole. The extent of disclosures about IPR&D should not give undue emphasis to IPR&D when R&D is a relatively minor aspect of the overall financial activities of the company.

- To the extent that contemplated disclosures about IPR&D include forward-looking information, a public company should consider the legal implications of including those disclosures in the financial statements rather than outside the financial statements, such as in management's discussion and analysis (MD&A). The task force noted that the safe harbor for forward-looking information adopted in the Private Securities Litigation Reform Act of 1995 does not extend to financial statement disclosures.

- Nonpublic companies should consider making the disclosures that a comparable public company would make.

5.04 The task force developed the following sample footnote disclosures as an illustration of the disclosure requirements of FASB ASC 805-20-50-1(c) as it relates to a significant acquisition involving assets to be used in R&D activities. (FASB ASC 805-10-55 provides illustrations of some of its disclosure requirements.) Note that this sample disclosure is not intended to be inclusive of all the disclosure requirements set forth in FASB ASC 805. In addition, this example is not intended to represent the necessary disclosures for all business combinations involving acquisition of assets to be used in R&D activities because an entity's disclosures are based upon the facts and circumstances as well as the materiality of each acquisition.

a. NOTE WW. SIGNIFICANT ACCOUNTING POLICIES—RESEARCH AND DEVELOPMENT (*Example not specific to any industry*)

IPR&D assets represent capitalized incomplete research projects that Company A acquired through business combinations. Such assets are initially measured at their acquisition date fair values. For transactions that closed prior to 2009, the fair value of such projects was expensed upon acquisition unless they had an alternative future use. For transactions that close after 2009, the fair value of the research projects is recorded as intangible assets on the consolidated balance sheet rather than expensed regardless of whether these assets have an alternative future use.

The amounts capitalized are being accounted for as indefinite-lived intangible assets, subject to impairment testing until completion or abandonment of R&D efforts associated with the projects. Upon successful completion of each project, Company A will make a determination as to the then remaining useful life of the intangible asset and begin amortization. Company A tests its indefinite-lived intangibles, including IPR&D assets, for impairment at least annually, through a one-step test that compares the fair value of the indefinite-lived intangible asset with the asset's carrying value.

IPR&D projects acquired as part of an asset acquisition are expensed as incurred unless they have an alternative future use.

R&D costs are expensed as incurred. These expenses include the costs of our proprietary R&D efforts, as well as costs of IPR&D projects acquired as part of an asset acquisition that have no alternative future use.

b. NOTE XX. ACQUISITIONS (*Technology company example*)

On October 5, 2009, Company A acquired all of the outstanding shares of Company X in a transaction accounted for as a business combination. Company X was engaged in licensing, implementing, and supporting business network software systems and had a well-established global service and support team. As a

result of this acquisition, Company A is expected to become the largest provider of business network software systems in North America.

The total consideration transferred of $1 billion for Company X's equity consisted of approximately $400 million in cash and the issuance of four million shares of Company A's common stock with a fair value of $600 million. In addition, $20 million of acquisition-related costs were included in selling, general, and administrative expenses for year ended December 31, 2009. The goodwill of $785 million recognized by Company A because of the acquisition is due primarily to synergies of the combination of Company A and Company X. Short-term liabilities with a fair value of $300 million and long-term liabilities with a fair value of $700 million were assumed by Company A. The results of operations of Company X and the fair value of the assets acquired and liabilities assumed are included in Company A's financial statements from the date of acquisition.

The following table summarizes the amounts of assets acquired and liabilities assumed that were recognized at the acquisition date:

Assets Acquired & Liabilities Assumed as of the Acquisition Date

Inventory	$100
Property, plant, and equipment	650
Identifiable intangible assets:	
Developed technology	175
Customer list	25
Trademarks	40
IPR&D	200
Other assets	25
Short-term liabilities	(300)
Long-term liabilities	(700)
Total identifiable net assets	$215
Goodwill	785
	$1,000

Approximately $200 million of the consideration paid represents the fair value of acquired IPR&D projects that are considered identifiable assets as of the acquisition date. Those assets are considered indefinite lived until R&D efforts associated with the projects are completed or abandoned. The major acquired technology IPR&D projects include project A and project B.

[Note: Required pro forma disclosures have been omitted.]

c. NOTE YY: GOODWILL AND OTHER INTANGIBLE ASSETS—IN-PROCESS RESEARCH AND DEVELOPMENT (*Pharmaceutical company example*)

> IPR&D assets represent IPR&D projects that have not yet received regulatory approval and are required to be classified as indefinite-lived assets until the successful completion or the abandonment of the associated R&D efforts. Accordingly, during the development period after the date of acquisition, these assets will not be amortized until approval is obtained in one or more jurisdictions which, individually or combined, are expected to generate a significant portion of the total revenue expected to be earned by an IPR&D project. At that time, we will determine the useful life of the asset, reclassify the asset out of IPR&D, and begin amortization. In 2009, project A received regulatory approval in a jurisdiction which is expected to generate a significant portion of the total revenue expected to be earned by that project and, as a result, we reclassified the asset from IPR&D to Developed Technology and began to amortize the asset.
>
> If the associated R&D effort is abandoned, the related IPR&D assets will likely be written off, and we will record an impairment loss in our consolidated statements of income.
>
> All of these IPR&D assets were acquired in connection with our acquisition of Company Y. The significant components of IPR&D assets are project A and projects for the treatment of Alzheimer's disease, cancer, and leukemia, among others.

5.05 *MD&A.* The task force notes that the objectives and requirements of MD&A as stated in the instructions in Regulation S-K include the following:

- The purpose of MD&A is to provide to investors and other users information relevant to an assessment of the financial condition and results of operations of the registrant as determined by evaluating the amounts and certainty of cash flows from operations and from outside sources. The information provided need only include that which does not clearly appear in the registrant's financial statements.

- MD&A should focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition. This would include descriptions and amounts of (*a*) matters that would have an impact on future operations and have not had an impact in the past, and (*b*) matters that have had an impact on reported operations and are not expected to have an impact upon future operations.

5.06 Registrants are encouraged, but not required, to supply forward-looking information. This is to be distinguished from presently known data that will affect future operating results, such as

known future increases in costs. This latter data may be required to be disclosed. Any forward-looking information supplied is expressly covered by the safe harbor rule for projections.

5.07 The task force also notes the following considerations that could influence management's consideration of disclosures to be included in MD&A regarding IPR&D:

- Acquired IPR&D projects represent a known event that may produce uncertainty that could reasonably be expected to materially affect future operating results due to additional R&D expenses expected to be incurred to complete the projects and changes in revenue and profitability from changes in the product sales mix.

- Acquired IPR&D projects may represent a material demand on liquid resources to fund completion of the projects.

- Qualitative information about management's objectives in material acquisitions of businesses and intangibles may be helpful in understanding the financial statements "through the eyes of management."

- The nature of certain businesses may be high risk and require investment in a large number of projects for achieving a successful portfolio of approved products. As such, many of the early-stage IPR&D projects could become impaired and be written off at some time in the future.

Additional Considerations for Asset Acquisitions

5.08 The task force observed that the disclosures required by U.S. GAAP in FASB ASC 730, *Research and Development*, are limited to the total R&D costs charged to expense in each period for which an income statement is presented. In addition, FASB ASC 350-30-50-1(c) requires disclosing the amount of IPR&D assets acquired in an asset acquisition and written off in the period, and the line item in the income statement in which the amounts written off are aggregated.

5.09 In determining whether entities should provide additional disclosures about IPR&D assets, the task force believes the same general considerations should be made for asset acquisitions as identified previously for IPR&D assets acquired in a business combination.

5.10 The task force developed the following sample footnote disclosures as an illustration of best practices for a significant asset acquisition involving IPR&D assets. Note that this sample disclosure is not intended to be applicable for all fact patterns; an entity's disclosures are based on the facts and circumstances as well as the materiality of each acquisition.

a. NOTE X: SIGNIFICANT ACCOUNTING POLICIES—RESEARCH AND DEVELOPMENT

> R&D costs are expensed as incurred. These expenses include the costs of our proprietary R&D efforts, as well as costs of IPR&D projects acquired as part

of an asset acquisition that have no alternative future use. Upfront and milestone payments due to third parties in connection with R&D collaborations prior to regulatory approval are expensed as incurred. Payments due to third parties upon or subsequent to regulatory approval are capitalized and amortized over the shorter of the remaining license or product patent life. Nonrefundable advance payments for goods and services that will be used in future R&D activities are expensed when the activity has been performed or when the goods have been received rather than when the payment is made.

Company A incurred R&D expenses of $X, $Y, and $Z million in 2009, 2008, and 2007, respectively, including in-process technology of $200 million that was acquired in an asset acquisition in 2009 and had no alternative future use. The value of acquired in-process technology that was expensed was determined by identifying those acquired specific IPR&D projects that would be continued and which (a) were incomplete and (b) had no alternative future use.

b. NOTE XX. ASSET ACQUISITION

On October 5, 2009, Company A acquired a library of molecules for high-throughput screening of drug candidates and certain potential drug candidates for $300 million in cash. We allocated the consideration paid based on relative fair value, and $100 million was attributable to the intellectual property related to the library of molecules that had an alternative future use and, as a result, was recognized as an IPR&D asset, an identifiable intangible asset, with an estimated remaining useful life of 5 years. The remaining $200 million was recorded as R&D expense because the potential drug candidates do not have an alternative future use.

Questions and Answers—Asset Acquisitions

5.11 The task force identified the following question related to situations in which the reporting for asset acquisitions in financial statements has historically reflected diversity in practice.

5.12 *Question*: How should an acquiring entity classify in its statement of cash flows an R&D charge associated with the costs of IPR&D projects acquired as part of an asset acquisition that have no alternative future use?

Answer: Best practices suggest that an acquiring entity should report its cash acquisition of assets to be used in R&D activities as an investing outflow in its statement of cash flows. In this regard, an acquiring entity should treat assets acquired to be used in R&D activities similar to how it reports other acquired assets in the statement of cash flows. Although acquired IPR&D may lack

an alternative future use, it is still an asset.

When arriving at cash flows from operating activities under the indirect method of reporting cash flows, best practices suggest that an acquiring entity should add back to net income the costs of assets acquired to be used in R&D activities that are charged to expense. That adjustment is necessary to eliminate from operating cash flows those cash outflows of assets acquired to be used in R&D activities that are reflected in investing activities.

Chapter 6

Valuation of IPR&D Assets[1]

Introduction

6.01 This chapter describes best practices related to measuring the fair value of the intangible assets used in research and development (R&D) activities, including specific in-process R&D (IPR&D) projects (subsequently referred to as *IPR&D assets*). Although this guide and this chapter mostly focus on IPR&D assets, methodologies described in this chapter can also be utilized for estimating fair value of assets resulting from R&D activities. This chapter discusses relevant considerations related to Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 820, *Fair Value Measurement*, identification of the appropriate valuation methodologies, use of prospective financial information (PFI), specific considerations for the various methodologies a reporting entity would use to value IPR&D assets and valuation report considerations, and includes a comprehensive example that demonstrates application of concepts discussed.

6.02 It should be noted that the acquisition of IPR&D assets often involves an element of contingent consideration. Although the valuation of contingent consideration is beyond the scope of this guide, this chapter contains several references to contingent consideration to remind valuation specialists that assumptions used in valuing IPR&D assets and related contingent consideration in a business combination would need to be consistent or reconcilable. For example, discount rates used in measuring the contingent consideration would need to be compared and contrasted with the discount rates used for valuing IPR&D assets, which may contain similar, but not identical, conditional aspects. For instance, a payout of contingent consideration will often have a shorter duration than the IPR&D project and resulting product to which it is linked because it may be associated with a specific milestone or a series of milestones. Conversely, if there is a contingent consideration associated with the IPR&D asset being valued and the asset and liability correspond to each other (for example, in terms of cash flows, risk characteristics, and so on), the IPR&D Task Force (task force) recommends that a valuation specialist consider the appropriateness of synchronizing methodologies and inputs employed to value the IPR&D asset and the corresponding liability. However, it should be noted that although this guide focuses on IPR&D assets which, as of the writing of this guide, are often valued using conditional value - *discount rate adjustment techniques*; liabilities such as those associated with contingent consideration are often valued using *expected present value techniques*.

Considerations Related to FASB ASC 820[2]

[1] This chapter includes a number of examples that demonstrate concepts discussed in this and preceding chapters of this guide and are not intended to establish requirements. Furthermore, the assumptions and inputs used in these examples are illustrative only and are not intended to serve as guidelines. Facts and circumstances of each individual situation should be considered when performing an actual valuation.

Overview

6.03 As noted previously, FASB ASC 805, *Business Combination*, requires that identifiable assets acquired and liabilities assumed in a business combination be recognized at their fair values (provided they meet the definitions of *assets* and *liabilities* in FASB Concepts Statement No. 6, *Elements of Financial Statements*, at the acquisition date.) In asset acquisitions, consistent with FASB ASC 730-10-25-2 (c), intangible assets that are purchased from others for use in R&D activities are capitalized only if they have alternative future uses. Furthermore, IPR&D assets acquired in asset acquisitions are measured at cost allocated based on their relative fair values. Subsequent to a business combination or an asset acquisition, capitalized IPR&D assets and assets resulting from R&D activities would need to be measured at fair value for impairment testing purposes (see chapter 4 for a detailed discussion regarding impairment testing.) FASB ASC 820 provides the framework for measuring these fair values. Although this guide does not provide an in-depth discussion of FASB ASC 820, the following sections focus on those aspects of FASB ASC 820 that affect the assumptions and methods or techniques used in the valuation of IPR&D assets.

6.04 FASB ASC 820 codifies a number of fair value concepts, representing the framework for fair value measurement in financial reporting. These concepts include the following:

- *Fair value definition.* Under FASB ASC 820, *fair value* is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. It is important to note that under this definition, fair value is an exit price from a market participant perspective.

- *Principal (or most advantageous) market.* FASB ASC 820-10-35-5 states that a fair value measurement assumes that the transaction to sell the asset or transfer the liability takes place either in the *principal market* (defined as the market with the greatest volume and level of activity for the asset or liability) for the asset or liability or, in the absence of a principal market, in the *most advantageous market* (defined as the market that maximizes the amount that would be received to sell the asset or

[2] Guidance in Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 820, *Fair Value Measurement*, included in this guide reflects amendments in Accounting Standards Update (ASU) No. 2011-04, *Fair Value Measurement (Topic 820): Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRSs*. ASU No. 2011-04, which was issued in May 2011, does not extend the use of fair value accounting, but provides guidance on how it should be applied where its use is already required or permitted by other standards. ASU No. 2011-04 supersedes most of the guidance in FASB ASC 820, although many of the changes are clarifications of existing guidance or wording changes to align with International Financial Reporting Standard No. 13, *Fair Value Measurement*. It also reflects FASB's consideration of the different characteristics of public and nonpublic entities and the needs of users of their financial statements. Nonpublic entities are exempt from a number of the new disclosure requirements.

The amendments in ASU No. 2011-04 are to be applied prospectively. For public entities, the amendments are effective during interim and annual periods beginning after December 15, 2011. For nonpublic entities, the amendments are effective for annual periods beginning after December 15, 2011. Early application by public entities is not permitted. Nonpublic entities may apply the amendments in ASU No. 2011-04 early, but no earlier than for interim periods beginning after December 15, 2011. Readers should refer to the FASB website for more information.

minimizes the amount that would be paid to transfer the liability, after taking into account transaction costs and transportation costs) for the asset or liability.

- *Highest and best use for nonfinancial assets.* Defined as the use of a nonfinancial asset by market participants that would maximize the value of the asset or the group of assets and liabilities (for example, a business) within which the asset would be used. FASB ASC 820-10-35-10E indicates that the highest and best use of a nonfinancial asset establishes the valuation premise used to measure the fair value of the asset, as follows: (*a*) in combination with other assets or with other assets and liabilities, and (*b*) on a standalone basis. Refer to the "Highest and Best Use for Nonfinancial Assets" section of this chapter for a more detailed discussion.

- *Market participants.* FASB ASC 820-10-35-9 provides that a reporting entity should measure the fair value of an asset or a liability using the assumptions that market participants would use in pricing the asset or liability, assuming that market participants act in their economic best interest. Refer to the "Identification of Market Participants" section of this chapter for a more detailed discussion.

- *Valuation techniques.* FASB ASC 820-10-35-24A provides that three widely used valuation techniques are the market approach, cost approach, and income approach. The main aspects of those approaches are summarized in paragraphs 3A–3G of FASB ASC 820-10-55. An entity should use valuation techniques consistent with one or more of those approaches to measure fair value.

- *Fair value hierarchy.* FASB ASC 820-10 establishes a fair value hierarchy that categorizes into three levels (level 1, level 2, and level 3) the inputs to valuation techniques used to measure fair value. The fair value hierarchy gives the highest priority to quoted prices (unadjusted) in active markets for identical assets or liabilities (level 1 inputs) and the lowest priority to unobservable inputs (level 3 inputs). However, when valuing IPR&D assets, unobservable inputs are often used due to lack of relevant observable data.

6.05 Key considerations from FASB ASC 820 that affect fair value measurement of IPR&D assets include market participants and the highest and best use (in combination with other assets or with other assets and liabilities or on a standalone basis). The following are brief discussions of these concepts and some examples that illustrate them.

Identification of Market Participants

6.06 FASB ASC 820 defines *fair value* as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Therefore, before the appropriate valuation method or key assumptions can be selected for a given IPR&D asset, it is necessary to identify the characteristics of the appropriate market participants.

6.07 According to the FASB ASC glossary, *market participants* are buyers and sellers in the

principal (or most advantageous) market for the asset or liability that have all of the following characteristics:

a. They are independent of each other, that is, they are not related parties, although the price in a related-party transaction may be used as an input to a fair value measurement if the reporting entity has evidence that the transaction was entered into at market terms.

b. They are knowledgeable, having a reasonable understanding about the asset or liability and the transaction using all available information, including information that might be obtained through due diligence efforts that are usual and customary.

c. They are able to enter into a transaction for the asset or liability.

d. They are willing to enter into a transaction for the asset or liability, that is, they are motivated but not forced or otherwise compelled to do so.

6.08 As indicated in paragraph 6.04, when valuing IPR&D assets, unobservable inputs are often used due to lack of relevant observable data. FASB ASC 820-10-35-54A states that "[a] reporting entity shall develop unobservable inputs using the best information available in the circumstances, which might include the reporting entity's own data. In developing unobservable inputs, a reporting entity may begin with its own data, but it shall adjust those data if reasonably available information indicates that other market participants would use different data or there is something particular to the reporting entity that is not available to other market participants (for example, an entity-specific synergy). A reporting entity need not undertake exhaustive efforts to obtain information about market participant assumptions. However, a reporting entity shall take into account all information about market participant assumptions that is reasonably available. Unobservable inputs developed in the manner described above are considered market participant assumptions and meet the objective of a fair value measurement." Thus, the task force believes that the reporting entity is not precluded from being a market participant as long as the transaction entered into is arm's length in nature. However, the task force believes that it is incumbent upon the reporting entity to ensure that its own assumptions are consistent with those of market participants. See paragraphs 6.43–6.49 for a further discussion about ensuring that the reporting entity's assumptions are consistent with those of market participants.

6.09 FASB ASC 820-10-35-9 states that "the reporting entity need not identify specific market participants. Rather, the reporting entity shall identify characteristics that distinguish market participants generally." The identification of market participant characteristics is an important aspect of the valuation process, particularly when considering how an asset or liability will be used. However, the identification of market participant characteristics is subjective and dependent on specific facts and circumstances. Helpful sources of information to consider when performing this identification include the following:

- In the case of a business combination or an asset acquisition (subsequently collectively referred to as a *transaction*): press releases, prior bids, board of director presentations, due diligence documents, deal models, a list of all known bidders in the

transaction and those who did not participate in the bidding process (if the transaction was subject to competitive bids), a list of comparable companies, and so forth

- In the absence of a transaction: MD&A of the reporting entity and its competitors; industry, market, and government studies; merger and acquisition activity surrounding private equity, venture capital, and hedge funds

6.10 Also, when identifying market participant characteristics, it may be helpful to consider the following factors:

- Current industry trends (for example, consolidation), as well as motivations of key competitors and potential bidders for entities and assets and whether market transactions align with those trends and motivations. For example, a shortage of raw materials or decline in demand for certain industries could be an indication for future industry consolidation. As another example, consolidation would generally be anticipated in the pharmaceutical industry if pharmaceutical companies face dwindling drug pipelines coupled with increasing R&D costs.

- In the case of a transaction, the subject entity's growth and profitability prospects on a standalone basis and in conjunction with the operations and perspectives of the potential market participants (that is, the actual and potential bidders). This analysis would take into account the subject entity's expected performance within the context of key competitors' performance, industry performance, and the overall economy.

- In the case of a transaction, strategic intent of the acquirer versus the intent of the potential market participants to determine the rationale for the transaction.

- In the case of a transaction, nature of any preexisting relationship between acquirer and subject, if any. Assumptions regarding whether the acquirer could be a key supplier, a key customer, or a key competitor of the target (present or potential) should be evaluated.

- Geographic location of reporting entity's operations or markets served, or both, which could affect highest and best use of assets being valued, existence and extent of *synergies,* and so forth.

- The general economy and capital market condition, which could affect the ability for companies to successfully bid for similar businesses, the volume of acquisitions entered into by strategic buyers versus financial buyers, and so forth. For instance, during periods of economic turmoil, acquisitions by private equity firms decline significantly because such buyers are generally unable to access debt capital levels or terms that are available to them during times of economic strength and growth.

6.11 If there are numerous potential market participants for a particular business or asset, the most likely market participant may be considered to be the one who would most highly value the business or asset as of the acquisition date. As a result, the acquirer in the subject transaction

may be presumed to have been willing to pay the highest price for the acquired assets and, therefore, could be indicative of the characteristics of likely market participants. However, for situations in which there was no bidding process, the seller was under distress, entity-specific synergies affected the transaction, or pricing errors were made, this may not be an appropriate assumption.

6.12 In addition, reporting entities and valuation specialists need to be aware that there may be a difference between the market participants for a particular business and those for a specific asset or collection of assets. In most circumstances, the highest price is paid for a collection of assets or the business as a whole. Therefore, determining the likely market participants may prove to be challenging at the individual asset level. From a practical perspective, however, due to the lack of transaction activity for specific assets or collection of assets, the set of likely market participants may be identical for the overall entity, as well as for the specific asset or collection of assets.

6.13 In identifying market participants, a reporting entity should consider both strategic and financial buyers. *Strategic buyers* engage in the same or related businesses and are likely peer companies or competitors of the subject entity or the reporting entity. Other buyers, including those that may not have investments in similar businesses or operations of the subject entity or the reporting entity, may also be considered market participants. These buyers, commonly referred to as *financial buyers*, may include individual investors, private equity and venture capital investors, and institutional investors. Private equity buyers, who have traditionally been considered financial buyers, have recently often been viewed as strategic buyers as well, based on their deep technical expertise in certain industries or through potential synergies that may be obtained in combination with other portfolio companies. Strategic buyers may also invest in businesses or operations unrelated to their business for diversification purposes.

6.14 FASB ASC 820 requires that fair value be measured using the assumptions that market participants would use when pricing an asset or a liability. Therefore, the distinction between financial and strategic buyers becomes significant when considering the cash flows and returns these assets and liabilities would be expected to generate in postacquisition period. For example, consideration of operating synergies would be quite different between the two sets of potential buyers. Although strategic buyers will often expect to realize cost saving synergies resulting from eliminating redundant administrative and other personnel functions or revenue synergies resulting from introduction to new markets or customers or the cross-selling of complementary products, or both, financial buyers will be unlikely to expect such synergies. The identification of the appropriate market participants and fact patterns will, therefore, influence whether the effects of such synergies should be included or excluded from the analysis.

Highest and Best Use for Nonfinancial Assets

6.15 In addition to the requirement to identify market participants for a given asset or liability, for nonfinancial assets, FASB ASC 820 also requires an entity to identify the asset's highest and best use. The FASB ASC glossary defines *highest and best use* as the use of a nonfinancial asset by market participants that would maximize the value of the asset or the group of assets and liabilities (for example, a business) within which the asset would be used. According to FASB

ASC 820-10-35-10B, the highest and best use of a nonfinancial asset takes into account the use of the asset that is physically possible, legally permissible, and financially feasible. FASB ASC 820-10-35-10E provides that the highest and best use of a nonfinancial asset establishes the valuation premise used to measure the fair value of the asset. The valuation premise assumes that the asset would be used either (*a*) in combination with other assets as a group (as installed or otherwise configured for use) or in combination with other assets and liabilities (for example, a business), or (*b*) on a standalone basis.

6.16 Most IPR&D assets will provide maximum value through their use in combination with other assets or with other assets and liabilities. Situations may arise, however, in which IPR&D assets will provide maximum value on a standalone basis. For example, if market participant buyers of a technology asset would likely choose to maximize value by outlicensing the IPR&D asset, the highest and best use of that asset would be on a standalone basis, and the valuation should be based on that premise.

6.17 It is important to highlight that the highest and best use by a market participant may differ from that of the reporting entity. For example, although the reporting entity might choose to discontinue the use of certain IPR&D assets, if market participants would maximize value by utilizing the asset for an extended period, this longer useful life would be used in the valuation analysis. (However, according to FASB ASC 350-30-35-1, "[t]he accounting for a recognized intangible asset is based on its useful life to the reporting entity." Therefore, the useful life for accounting purposes is based on management's expectations, not market participant's assumptions. For more information, see the "Useful Life of Assets Resulting from R&D Activities" section of chapter 4.) Other operating assumptions are similarly affected by the highest and best use valuation premise.

6.18 The identification of market participants and their highest and best use of a given nonfinancial asset are often of the utmost importance when dealing with assets used in R&D activities that may become monetized through various methods. Specifically, in the pharmaceutical and biotechnology industries, larger companies with developed infrastructure and expertise will often research, develop, manufacture, market, and distribute products independently. Smaller companies in these industries, however, will typically partner with a third party once their products reach a certain level of development and effectively outsource a number of the research and operational functions in exchange for profit-sharing arrangements. Because the cash flows and risks of these two business models vary significantly, the determination of how market participants would choose to monetize their investment in IPR&D assets has a substantial impact on the prospective cash flows from these assets and the valuation method or technique used to measure their fair value.

Questions and Answers—Market Participants; Highest and Best Use; Defensive IPR&D Assets; and IPR&D Assets Which Will Continue to Be Pursued

Electronic Devices Industry

6.19 *Question 1*: Company A acquired Company B in a business combination. Both Company A and Company B design, manufacture, and market networking products used in the IT and

telecommunications markets. Based on an assessment of Company B and the networking products industry, Company A's management believes that industry participants, such as Company A, represent the most likely buyers of Company B's assets. Therefore, Company A's management believes that strategic buyers reflect the market participants for the acquisition of Company B. Company A has an ongoing IPR&D project, project X, the goal of which is to develop a product for optimizing the performance of in-home wireless computing, which is believed to represent a significant market opportunity. At the time of the business combination, Company B also had an ongoing IPR&D project, project Y, related to the design of a product that would compete directly against the product developed by project X. In evaluating Company B's IPR&D project, Company A's management determined that it would not continue project Y due to the greater potential of Company A's project X, but that other market participants would likely choose to continue investing in project Y because such a decision would maximize the value of the group of assets in which project Y would be used. Should Company A recognize project Y when accounting for business combination with Company B?

Answer: Yes. Because project Y will be defending an ongoing IPR&D project of Company A, project X, it would meet the "used in R&D activities" criteria (discussed in chapter 2) and, therefore, it would be recognized as an IPR&D asset. Company A's decision to discontinue project Y reflects entity-specific factors that are unique to Company A and, therefore, do not represent market participant assumptions. Due to the determination that other market participants would likely continue investing in project Y, the highest and best use of project Y would be assessed considering its continued pursuit by market participants.

6.20 *Question 2*: Assuming the same fact pattern as in question 1, how should this asset be valued, and from what sources should data be gathered?

Answer: Company A should consider using appropriate valuation techniques and potentially considering data sources primarily from Company B's management and other market participants because they would represent parties that would continue developing project Y. See chapter 1 for discussion of valuation techniques commonly used to value IPR&D assets. See paragraphs 6.29–6.49 of this chapter (Steps 1–3) for a discussion of sources of data to be used in valuing IPR&D assets, including those that would be considered in preparing and evaluating PFI. The quality and quantity of data available, along with the characteristics of an IPR&D asset, may influence the selection of valuation techniques used to value that IPR&D asset.

6.21 *Question 3*: Assume the same facts as in question 1. However, in evaluating Company B's IPR&D project, Company A's management determined that other market participants either have already launched competing products or had their own IPR&D projects nearing completion. As a result, Company A's management determined that other market participants would also likely choose to discontinue investing in project Y. However, due to the fact that idling project Y removes a potential competing product from the market, the decision to idle project Y increases the potential market share for competing IPR&D projects, such as project X, and existing products. Should Company A recognize project Y when accounting for business combination with Company B?

Answer: Yes, Company A should recognize project Y and measure it at fair value based on market participation assumptions, which in this circumstance, would reflect its use as a defensive asset. In this example, project Y is an asset that Company A does not intend to use directly, but it is likely contributing to an increase in the fair value of Company A's assets related to Project X. Due to the determination that other market participants would also likely discontinue investing in project Y, Company A should recognize project Y as a defensive IPR&D asset.

6.22 *Question 4*: Assuming the same fact pattern as in question 3, how should this asset be valued, and from what sources should data be gathered?

Answer: Methods that recognize the incremental revenue, decreased costs, decreased risks, and so forth, to a market participant (for example, using the "with and without" method) might be more appropriate for use in situations such as this. Data would be gathered primarily from Company A's management as long as their use of the asset is consistent with market participant assumptions.

6.23 *Question 5*: In a business combination, Company A acquired project Y and a group of assets required for its completion: asset 1, asset 2, and asset 3. Assets 1 and 2 represent patented technology. On an individual asset by asset basis, asset 1 has a fair value of $100; asset 2 has a fair value of $200; asset 3 has a fair value of $300; and project Y has a fair value of $0, for a total value for the group of related assets of $600. The individual value of assets 1 and 2 was measured using a relief from royalty method, assuming these assets were individually licensed or sold to market participants. However, on a grouped basis, asset 1 has a fair value of $50; asset 2 has a fair value of $150; asset 3 has a fair value of $300; and project Y has a fair value of $500, for a total value for the group of related assets of $1,000. What is the appropriate valuation premise under highest and best use?

Answer: Highest and best use in this case is in combination with other assets as a group. Although the use of the assets within the group does not maximize the fair value of each of the assets individually (that is, asset 1 and asset 2 would have higher values on a standalone basis), it maximizes the fair value of the assets as a group. Therefore, the fair value of the acquired assets would be determined on the basis of the use of the assets as a group.

Pharmaceutical Industry

6.24 *Question 6*: Company A, a biopharmaceutical company engaged in drug development, acquired 100 percent of the equity of Company B, also a biopharmaceutical company engaged in drug development. Company B was acquired primarily for its two IPR&D assets, compound 1 and compound 2 (the compounds). The compounds, currently in phase II of clinical trials, were acquired largely to be combined with Company A's own existing compound, compound 3. Company A's management believes either of the compounds could be combined with compound 3 as part of an overall drug portfolio to be sold in the market as a comprehensive treatment of a specific medical condition. As part of this assumption, Company A has projected significant revenue synergies resulting from this acquisition. Further, Company A's management indicated the incremental cost associated with selling one of the compounds in conjunction with another existing product was minimal, resulting in significant increases in profitability. Several other

biopharmaceutical companies were part of the bidding process for Company B; as such, they are assumed to be market participants. These fellow bidders also own and are developing similar compounds to compound 3, and these bidders would have similar intentions for combining their similar compounds with the compounds of Company B. Therefore, the assumptions Company A's management made in the PFI surrounding the revenue synergies resulting from the acquisition were considered to be consistent with other market participants. What is the highest and best use for compounds 1 and 2, including whether they should be valued on a standalone basis or in combination with other assets or with other assets and liabilities?

Answer: Facts described in question 6 suggest that from a market participant perspective, the highest and best use of either compound 1 or compound 2 will be in combination with compound 3. It is uncertain which of these two compounds will eventually produce the successful product. Also, the facts suggest that only one compound will ultimately be used, and R&D efforts associated with the other one will be abandoned. Therefore, the highest and best use for the two acquired compounds is in combination with compound 3, and the valuation would be based on the single product that would result from the combination of compound 3 with either compound 1 or compound 2. (Please note that question 6 only addresses the highest and best use considerations for purposes of valuing the asset(s) and does not address the unit of account from an accounting perspective. For an in-depth discussion of unit of account considerations, please refer to chapter 2.)

6.25 *Question 7*: Assume the same facts as in question 6. Also, compound 1 was considered the lead compound, whereas compound 2 was considered a secondary asset, which would be developed if compound 1 fails in clinical trials. Any strategic buyer of Company B would expect to achieve the highest sales synergies through developing compound 1. Based on the phase I trial results, Company A's management believes compound 1 is a superior compound. Compound 2 was deemed less potent, has a lesser effect, and faced potential formulation challenges when compared with compound 1, based on the latest clinical trial results. Therefore, Company A's management believes any market participant would pursue development of compound 2 only if compound 1 fails clinical trials. What is the highest and best use for compounds 1 and 2, including whether they should be valued on a standalone basis or in combination with other assets or with other assets and liabilities?

Answer: In this case, the highest and best use would likely be to measure the fair value of compound 1 and 2 on a combined basis because the value of compound 2 is contingent on the success or failure of compound 1, from the perspective of the market participant. As in question 6, the revenue and cost synergies available to Company A would have to be evaluated from the perspective of the market participants.

6.26 *Question 8*: Assume the same facts as in question 6. Also, Company B has developed compound 4 for the treatment of a medical condition that is different from the medical condition that will be treated by compounds 1, 2, and 3. Because Company A does not have a development platform for this different medical condition, Company A does not intend to develop compound 4 further. However, other market participants with these development platforms may perceive compound 4 to be valuable. What is the highest and best use for compound 4, including whether

it should be valued on a standalone basis or in combination with other assets or with other assets and liabilities?

Answer: In this case, compound 4's fair value would best be measured on a standalone basis. The fair value of compound 4 would be measured based on the highest and best use from a market participant perspective, which in this case, would differ from Company B's expected usage.

Use of Prospective Financial Information

Overview

6.27 As noted in chapter 1 of this guide, valuation approaches may be classified broadly as cost, market, or income approaches. IPR&D assets are most typically valued using the income approach, which requires the use of PFI. This section addresses steps to derive, prepare, and analyze the PFI for IPR&D assets.

6.28 The application of the valuation methods or techniques that fall under the income approach (such as the multiperiod excess earnings, relief from royalty, decision tree, and real option techniques) generally begin with the following steps related to the overall PFI for the subject entity:

- Step 1: In the case of a transaction, select the PFI that best reflects the final purchase price. Alternatively, consider subject company's budgets, business plans, forecasts, and projections.[3]
- Step 2: Evaluate and document the key assumptions relating to the PFI.
- Step 3: Ensure that the assumptions made in the development of the PFI are consistent with those of market participants.
- Step 4: Isolate the PFI related to the IPR&D assets.
- Step 5: Compare the PFI attributable to the IPR&D assets to the PFI for the overall entity.

[3] The terms *forecast* and *projection*, as used in this guide, refer to any process by which available evidence is accumulated and evaluated for purposes of measuring fair value of acquired in-process research and development (IPR&D) assets. Judgment is necessary to determine how detailed or formalized that evaluation process should be. This guide does not imply the need to prepare either a *financial forecast* or a *financial projection* within the meaning of those terms in AT section 301, *Financial Forecasts and Projections* (AICPA, *Professional Standards*).

Step 1: In the case of a transaction, select the PFI that best reflects the final purchase price. Alternatively, consider subject company's budgets, business plans, forecasts, and projections

6.29 PFI can potentially come from a number of different sources, each of which may require certain modifications and considerations in order to be used in the valuation of IPR&D assets. The following is a list of some sources from which PFI can be derived:

- Acquisition models prepared by the acquirer or its advisors to perform due diligence on the subject company or determine a bidding price
- Internal budgets and forecasts prepared by the subject company
- Projections prepared by the subject company or its advisors in connection with efforts to market the business to potential acquirers (for example, offering memoranda)
- Board of director presentations prepared by the acquirer or the subject company
- Product road maps or other similar detail of the subject company's expected evolution from current products and technologies to future products and technologies
- Forecasts prepared for lenders
- Outlooks prepared by equity or industry analysts, government agencies, market experts, or other third parties who forecast operational trends for the subject company or its peers and competitors

6.30 Although not all of these data sources will be available in a given transaction, the task force believes that, at a minimum, the valuation specialist should collect data that would have been considered by potential acquirers in performing their due diligence. For instance, interviews with management and other informed parties can reveal additional information that was known or knowable as of the date of the business combination but not contained in any of the documentation listed in the preceding paragraph. The valuation specialist also would need to consider significant changes in performance expectations that may have occurred between the date when the acquiring and subject companies came to final terms and the actual date of the business combination.

6.31 The task force believes that the valuation specialist should gain an understanding of the PFI that best represents the expectations that were used in negotiating the final purchase price and how this PFI reconciles with market participant assumptions. Typically, PFI considered by the acquiring company may be the most readily available data to the valuation specialist. However, this data may not accurately represent the expectations of market participants or the highest and best use of the assets (as discussed further in paragraphs 6.43–6.49). As such, this PFI may not be the most appropriate for use in valuing the acquired assets and liabilities, and the task force believes that the PFI should be challenged and, where appropriate, adjusted to reflect market participant assumptions.

6.32 The valuation specialist should develop an understanding of the process by which the PFI was prepared in order to support various inputs and assumptions and evaluate their suitability for use in the valuation analysis.

6.33 When evaluating a potential target, various PFI alternatives frequently are prepared. The PFI may encompass various alternatives, including optimistic, base case, pessimistic scenarios, or all three. All PFI produced by parties to the transaction (as well as by their advisers) would need to be evaluated by the valuation specialist to understand the underlying assumptions and the differences between the sets of assumptions. Ultimately, however, the source PFI would need to be adjusted, where appropriate, to reflect the PFI expected by market participants.

Step 2: Evaluate and document the key assumptions relating to the PFI

6.34 The task force believes that management of the reporting entity should take responsibility for the completeness and accuracy of the PFI selected for use in the valuation analysis. Management would be expected to represent to the valuation specialist that the PFI represents management's best estimate of the economic benefits resulting from the assets being valued. Although the PFI may be documented only at an aggregate entity level, the aggregate PFI may need to be split into relevant components, which may include current and future products, IPR&D projects, geography, and so forth. Ultimately, management also would be expected to provide the valuation specialist with data supporting the key assumptions used in the preparation of the PFI, including identification of any expected synergies. Accordingly, the task force believes that the valuation specialist should not simply accept PFI from management without investigating its suitability for use in the valuation analysis. Instead, the valuation specialist is responsible for evaluating the assumptions used by management in preparing the PFI and concluding whether the PFI appears appropriate for use in valuing the IPR&D assets. In cases in which management does not have an appropriate set of PFI, the valuation specialist may assist management in the identification of such assumptions based on reasonable industry research and due diligence. However, management of the reporting entity is ultimately responsible for the PFI.

6.35 Historical financial data of the subject company is generally used as a starting point for evaluating the assumptions underlying the PFI to support the expectations for revenue and expense items, such as cost of sales, sales and marketing expenses, other operating expenses, R&D expenses, tax expenses, required levels of working capital and tangible assets, and so forth. Industry data, data from public filings of competitors, and reports generated by market research firms and industry analysts would also need to be considered as sources of objective evidence to support the assumptions in PFI.

6.36 The following is a brief discussion of specific elements of the PFI that generally would need to be evaluated by the valuation specialist, along with potential sources of objective evidence that may support each material assumption underlying the specific elements of PFI:

- *Revenue.* The valuation specialist's assessment of PFI begins with an analysis of the key assumptions related to revenue from current products and revenue that is expected to result from both specific IPR&D projects and R&D projects not yet commenced, including estimated number of units expected to be sold, estimated

selling prices throughout the selling period, estimated market penetration, and estimated market share. The valuation specialist would need to evaluate year-over-year unit growth (or decline) rates over the product(s) life cycle(s) (that is, the period of years over which revenue is expected to be received for a given technology or related product offering) and the reasonableness of average per-unit selling prices during the period, taking into consideration expected competitors' reactions, anticipated technological developments, and historical trends.

- *Costs of sales.* Valuation specialists would need to understand the difference between company-wide costs of sales and specific product-by-product costs of sales because costs of sales may change over a product's life cycle and likely will differ from product to product. It is important for valuation specialists to query management about past experience with prior product offerings and compare the trend of costs of sales for prior product offerings with those contained in the PFI.

- *R&D expense*. Historical financial data of the subject company and industry data would need to be analyzed to support R&D expense assumptions in the PFI for currently developed, in-process, and future projects.

- *Sales and marketing expense*. Product launch costs would need to be included in PFI if product development activities are expected to lead to the introduction of new product offerings. Product launch costs commonly are incurred during the introduction of new product offerings and can differ dramatically from routine sales and marketing expense. Objective evidence may be gathered from the reporting entity or subject company's prior experience with previously launched product offerings or from industry and competitors' data.

- *Other operating expense*. Historical financial data of the subject company and industry data would need to be analyzed to support assumptions in the PFI related to general and administrative, technical support, and other operating expenses.

- *Required levels of net working capital and tangible assets*. PFI may include expectations regarding working capital and tangible asset needs for the subject company. Historical levels of working capital and tangible assets, combined with industry experience available from the public filings of competitors, typically serve as the best evidence of required levels of assets. Such levels will further serve as an input to the calculation of future contributory asset charges in the valuation analysis. See paragraphs 6.77–6.93 for guidance on contributory asset charges.

- *Required levels of intangible assets*. PFI typically does not include expectations regarding the need to acquire additional intangible assets for the business in the aggregate because companies often do not budget purchases of intangible assets. Expenses related to the internal development of new intangible assets or maintenance of existing intangible assets, however, are typically included in PFI. Examples of such expenses include marketing or R&D expenses associated with the internal development or enhancement, or both, of brands and technology. Thus, such types of

expenses would need to be considered and included within the PFI. Additionally, levels of other intangible assets calculated as a result of the fair value measurement process, combined with industry experience available from the competitors' public filings, typically serve as the best evidence of required levels of intangible assets. Such levels will further serve as an input to the calculation of contributory asset charges in the valuation analysis. See paragraphs 6.77–6.93 for guidance on contributory asset charges.

6.37 When evaluating the assumptions used by management to develop the PFI, it is recommended that the valuation specialist also request (or gather through third party sources, when appropriate) some or all of the following information:

- Government, regulatory or industry publications, market surveys, engineering studies
- General economic indicators and industry statistics
- Historical financial statements of the subject company for an appropriate period of time (for example, the most recent five years)
- Transaction documents, press releases, board of directors' presentations, or other disclosures of the transaction
- Reports of analysts, market experts, governmental agencies, or other third parties, that relate to the transaction
- Technical analysis that relates to the subject company's products or technologies
- Sales or marketing materials used to sell the subject company's products and services
- Data on patents held by the subject company
- Subject company's analysis of its specific IPR&D projects, including analysis supporting management's approval of the projects and periodic status reports
- Historical R&D expenditures and the subject company's R&D budget
- Product road map or other similar detail of the subject company's expected evolution from current products and technologies to future products and technologies
- Licensing agreements that exist for either the development of technologies or ultimate marketing of product manifestations
- Trends and patterns developed from the subject company's operating history (for example, life cycles of prior generations of products and rate of changes in average selling prices)

- Any other relevant information when available, as appropriate

6.38 In the case of a transaction, the overall purchase price is most often based on unconditional or expected cash flows (discussed in greater detail in paragraphs 6.94–6.115). If the IPR&D cash flows are *conditional cash flows* or assume commercial success, these cash flows would need to be adjusted for the probability of success or weighted with downside cash flows that reflect potential development failure. It should be noted that the assumptions used to value the overall entity would not always be identical to the assumptions used to value an IPR&D asset. For example, if the PFI that is used to value the overall entity is based on expected cash flows while the PFI that is used to value an IPR&D asset is based on conditional cash flows, those cash flows may not be identical. As a result, because cash flows themselves could be different, it may be appropriate to apply different discount rates to those cash flows. The task force recommends comparing and contrasting the assumptions used to value the individual asset to those used to value the overall entity to make sure they are consistent or can be reconciled.

6.39 Some of the factors to consider in assessing probability factors and their impact include the following:

- *Industry segment*. Higher risk may be associated with industries or subsegments within an industry with certain characteristics, such as rapid technological or competitive change.

- *Length of time to complete the project.* The longer the development horizon (as measured by the stage of completion, milestones achieved, and so forth), the greater the risk that the expected market for the new product, service, or process will change.

- *History of the company bringing products to commercial success.* The more experience the reporting entity, the subject company, and others in the marketplace have had with successfully completing development of products of this nature and bringing those products to market, the greater the likelihood of commercial success.

- *Competitive position.* If the IPR&D project is expected to introduce a product that will be the first to market, then expectations about commercial success may be higher than a project that will result in a follow-on product.

- *Regulatory environment*. The nature of the regulatory approval process that the IPR&D project will be subject to prior to commercialization would need to be taken into account.

- *External factors.* When the IPR&D project is affected by external events, such as the completion of complementary technology, the successful development of a competing technology, and so forth, these matters would need to be taken into account when assessing the probability of reaching technological feasibility.

- *Other factors.* Any other factors that would affect the probability of reaching technological feasibility would need to be considered.

Economic Cash Flows

6.40 It is important to ensure that the overall entity PFI is developed on a cash flow basis. Ultimately, the prospective cash flows would need to reflect economic cash flows, which may differ from budget data based on accounting principles generally accepted in the United States of America (U.S. GAAP). To illustrate, if the PFI for revenue is accrual-based and contains a significant amount of deferred revenues, one method to adjust for this difference is to remove from the PFI the accrual-based deferred revenue and expenses associated with generating that revenue. In addition to the consideration of a deferred revenue adjustment to the overall PFI, as noted previously, an adjustment to the required level of net working capital would also need to be considered. Another method would be to not adjust the revenue but to make a deduction from the PFI to reflect the cash flow associated with the deferred revenue because it has effectively already been received by the entity. The key to any adjustment is to avoid either double-counting or under-counting any revenue, expense, or profit.

6.41 In assessing the required level of working capital, the valuation specialist would need to determine whether deferred revenue may be included as a component of working capital. When making this determination, it is important to understand the underlying accounting for revenue recognition. For example, in the software industry where revenue recognition accounting[4] is based on vendor-specific objective evidence as provided in FASB ASC 985-605, deferred revenue may not correspond with the remaining legal performance obligation associated with services to be provided, in which case, the valuation specialist would need to measure the fair value of the remaining legal performance obligation associated with the deferred revenue.

6.42 To the extent that the valuation specialist does not receive sufficient support for particular PFI assumptions, the valuation specialist would need to investigate other records of the reporting entity as well as documents from external sources in an effort to obtain corroborating objective support for each material assumption. If conflicting data exists, the task force believes that the valuation specialist should discuss with management the need to either further support its assumptions or change those assumptions to be consistent with the objective evidence.

Step 3: Ensure that the assumptions made in the development of the PFI are consistent with those of market participants

6.43 FASB ASC 820-10-35-9 provides that a reporting entity should measure the fair value of an asset or a liability using the assumptions that market participants would use in pricing the asset or liability, assuming that market participants act in their economic best interest. Therefore, in analyzing the assumptions underlying the selected PFI, the valuation specialist would need to

[4] FASB and the International Accounting Standards Board are currently working on a joint revenue recognition project which may modify this and other industry-specific revenue recognition guidance. An exposure draft of the proposed standard was originally issued in June 2010. However, it is expected to be reexposed in 2011 to provide interested parties with an opportunity to comment on revisions that have been made since the publication of the exposure draft in June 2010. The latest information on the status of this joint project is available at www.fasb.org/cs/ContentServer?c=FASBContent_C&pagename=FASB%2FFASBContent_C%2FProjectUpdatePage&cid=900000011146.

ensure that, consistent with FASB ASC 820, the anticipated future performance reflects market participant assumptions. To the extent that relevant observable inputs are not available, FASB ASC 820 allows for the use of unobservable inputs to measure fair value. However, as indicated in FASB ASC 820-10-35-53, the fair value measurement objective remains the same, that is, an exit price at the measurement date from the perspective of a market participant that holds the asset or owes the liability. According to FASB ASC 820-10-35-54A, a reporting entity should develop unobservable inputs using the best information available in the circumstances, which might include the reporting entity's own data. However, as indicated in FASB ASC 820-10-35-53, unobservable inputs should reflect the assumptions that market participants would use when pricing the asset or liability, including assumptions about risk. When differentiating between entity-specific and market participant PFI, factors to consider may include, but are not limited to, the following:

- The reporting entity's strategies and objectives, which underlie the PFI, and how these strategies and objectives shaped the assumptions within the PFI
- The extent to which the reporting entity's expectations are consistent with the forecasts of industry analysts and market experts
- The level of revenue and cost synergies reflected within the PFI and whether or not those synergies would be available to a market participant
- Whether the PFI assumes use of the assets being valued that differs from their highest and best use

6.44 One of the most common areas in which the distinction between entity-specific and market participant assumptions arises relates to the inclusion of synergies within the PFI. Synergies unique to the combined enterprise should not be considered when measuring fair value of assets. It may be necessary to adjust the prospective revenue or expenses by revising the revenue, revenue growth, expenses, cost savings rates, and so forth from those used in the selected PFI to those that would reasonably be expected by market participants.

6.45 In addition to performing an analysis of synergies, the valuation specialist would confirm that the selected PFI assumes the highest and best use of the assets being valued. This usage determination should, again, be consistent with the assumptions made by a market participant.

Examples

6.46 *Eliminating entity-specific cost synergies*. Company A acquired Company X in a business combination. Selling costs for Company X are 40 percent of revenues, and the rate representative of performance of market participants is 30 percent of revenues. Due to the unique size and efficiency of its distribution channel, selling costs for Company A are 20 percent (also the rate used by Company A in its PFI that was used to negotiate the final purchase price). Selling costs in the PFI would be adjusted up to 30 percent, the rate representative of market participants, to eliminate a synergy specific to the acquiring company.

6.47 *Eliminating entity-specific revenue synergies*. Company A acquired Company X in a business combination. Company X's product complements Company A's product. Upon acquisition, Company A's combined product offering will be unique in the market, and Company A believes that it can derive 10 percent more in revenues from both products than it or market participants could if they were to sell either product on a separate standalone basis. The PFI used to measure fair value of Company X's product should exclude all revenues attributable to Company A's preexisting product and the incremental 10 percent increase in revenues derived from Company X's product, which resulted from having a combined product offering.

6.48 *Eliminating entity-specific income tax synergies*. Company A acquired Company X in a business combination. Company A currently does not pay income taxes because of considerable net operating loss carryforwards and, thus, does not expect to pay income taxes in the foreseeable future (whereas market participants are typically tax-paying entities.) In the PFI that Company A provides to the valuation specialist for use in valuing certain IPR&D assets, management of Company A does not include any expected income tax payments resulting from the cash flows attributable to the acquired assets. In other words, in the PFI prepared by Company A's management, the present value of the expected future cash flows attributed to the acquired assets is the same on a pretax basis as on an after-tax basis because no income tax payments are expected. The valuation specialist would adjust the PFI to include an estimate of the expected tax payments that market participants would be expected to pay on the future cash flows attributable to the acquired assets. The "favorable" tax attributes of Company A is an entity-specific synergy and, therefore, is eliminated from the PFI used to value the acquired assets.

6.49 *Eliminating entity-specific usage assumptions*. Company A acquired Company X in a business combination. Company X is currently in the process of developing a drug for the treatment of pancreatic cancer that has reached phase II of clinical trials. Company A is a large pharmaceutical company with the capabilities and intent to develop the subject drug through phase III trials, commercialization, and distribution. The valuation specialist has determined, however, that the market participant buyers of this in-process drug are smaller pharmaceutical companies that would require the help of a larger partner to complete clinical trials and bring the drug to market. The PFI used to value this asset would be adjusted to reflect assumptions of a company which would monetize its technology in partnership with a larger industry player.

Step 4: Isolate the PFI related to the IPR&D assets

6.50 Once the final, market participant PFI has been identified for the subject business as a whole, the valuation specialist would attempt to isolate those revenues and expenses related to the IPR&D assets from those of other business activities. For example, maintenance, consulting, service, and other ancillary revenues and costs would be considered individually by the valuation specialist to determine whether these economic benefits are directly related to the IPR&D assets. Only those ancillary revenues and costs directly related to the IPR&D assets would be considered when valuing these assets. For example, a software-related IPR&D project expected to generate revenue from both the upfront licensing agreement as well as ongoing maintenance contracts would be valued using both sources of revenue and their associated costs. Sales of complementary hardware products, however, would not necessarily be considered in the

valuation of the software IPR&D asset because these sales are not directly related to the subject asset.

6.51 The final PFI would extend only for the estimated useful life of the IPR&D assets. For example, the useful life of a pharmaceutical patented compound that will be marketed as a drug upon successful completion of development generally would be the longer of patent life or the period of market exclusivity (assuming a more successful drug does not deplete market share prior to expiration of the patent or exclusivity period).

6.52 The final PFI may be disaggregated into various subcomponents, including patents, software copyrights, enabling technology,[5] developed product technology, specific IPR&D projects,[6] technical drawings or manuals, and general intellectual know-how. Each subcomponent generally would be separately recognized and valued (provided that the subcomponent meets the applicable recognition criteria for recognition apart from goodwill). Typically, discussions with engineers and technical teams provide information on the appropriate categories to be valued based on how technology is deployed. However, if there is no basis for disaggregating, for example, cash flows attributable to patents from cash flows attributable to related technological know-how (including potentially proprietary technology), then patents may not be valued separately from related technological know-how.

6.53 *Enabling technology.* For purposes of this guide, *enabling technology* is defined as the underlying technology that has value through its continued use or reuse across many products or product families (product family represents many generations of a singular product). Effectively, enabling technology represents shared technology with multiple uses across many products or product families. Given that useful life, growth, risk, and profitability behaviors of enabling technology may be different from those of the products in which it is utilized, assuming that the enabling technology meets the accounting criteria for recognition apart from goodwill, it may be appropriate to value enabling technology separately. However, even if enabling technology is valued separately, enabling technology may not necessarily represent a separate unit of account from an accounting perspective (see paragraph 6.55 for a discussion of unit of account considerations.) Examples of enabling technology include, but are not limited to, a portfolio of patents, a software object library, or an underlying form of drug delivery technology.

6.54 The existence of enabling technology is dependent on facts and circumstances. In some cases, companies may "in-license" technology that serves as enabling technology for their

[5] See the glossary and paragraphs 6.53–6.56 of this guide for a description of enabling technology.

[6] As discussed in the "Unit of Account" section of chapter 2, in some cases, a reporting entity may conclude that a single IPR&D project represents several individual units of account (for example, a pharmaceutical company that is working on a project to develop a drug for which it will seek regulatory approval in several jurisdictions may conclude that it is appropriate to account for certain jurisdictions as separate units of account). When the unit of account is disaggregated in this manner, it is important to ensure that individual units of account are properly valued. To accomplish that, a valuation specialist would need to understand how costs and revenues or profits will be allocated among different units of account and to ensure that no unit of account unduly bears costs or unduly receives the benefit of revenues or profits. In this situation, costs and revenues or profits would need to be allocated consistent with assumptions of independent third party market participants. This would not be an issue when the unit of account is aggregated across several jurisdictions.

product development efforts or as the base for technology migration.[7] In other cases, enabling technology may not exist at all, such as when each new product is developed from a new or novel technology platform.

6.55 The task force does not intend to imply that enabling technology would always represent a separate unit of account. Items viewed as enabling technology would be recognized as separate assets only if they meet the applicable recognition criteria at the measurement date (which would be, for example, the acquisition date, in the case of a transaction). (For an in-depth discussion of recognition criteria and unit of account considerations, please refer to chapter 2.) Furthermore, enabling technology is not merely a balance sheet caption, but rather a description of how technology is used. Therefore, the use of enabling technology might be encompassed within other specific technologies or as a separately recognized shared technology asset. Question 2 in the "Questions and Answers—Core Technology" section of chapter 2 provides an example of enabling technology that is subsumed into other asset categories. For an example of enabling technology that is recognized separately, assume the same facts as in the example in chapter 2 (see question 2 in paragraph 2.29), except for the following: In this scenario, the delivery mechanism technology does not require significant alterations in order to be utilized in delivery of drug 2, and Company X is also outlicensing delivery mechanism technology to other pharmaceutical companies. Therefore, in this example, the delivery mechanism technology is being utilized by an existing product, products under development, and products developed by third parties. The task force believes that these kinds of circumstances would lead to a situation in which enabling technology represented by the delivery mechanism technology would meet the criteria for separate recognition. For another example of enabling technology that is recognized separately, consider the following fact pattern: Company A acquired Company X, which had a portfolio of patents. Company X has been using patented technology covered by these patents in its developed products and in its ongoing R&D activities across different product categories. Company X is also outlicensing this patented technology to other companies. Therefore, in this example, the patented technology (which meets FASB ASC 805 recognition criteria) is being utilized by an existing product, products under development, and products developed by third parties. The task force believes that these kinds of circumstances would lead to a situation in which enabling technology represented by the patented technology would meet the criteria for separate recognition. However, circumstances described in this example and in the preceding one are not intended to be all-inclusive, nor are they all required to be present in order for enabling technology to be recognized as a separate asset. Please note that the fact pattern in this example is similar to the fact pattern used in the "Comprehensive Example" section of this chapter, which, among other things, addresses patented technology (see paragraphs 6.183–6.184 and schedule 6-3, "Patents").

6.56 It is important to point out that the enabling technology concept is not synonymous with the concept of *core* or *base technology*, which was discussed in the original practice aid. The original practice aid defined *core* or *base technology* as "[t]hose technical processes, intellectual property, and the institutional understanding that exist within an organization with respect to products or processes that have been completed and that will aid in the development of future

[7] See the glossary and paragraph 6.57 of this guide for a description of technology migration.

products, services, or processes that will be designed in a manner to incorporate similar technologies." The task force believes that this definition was overly broad and was applied inconsistently in practice. The task force believes that enabling technology is a subset of items that used to be viewed as core technology because enabling technology will only exist when all the conditions described in the preceding paragraph are met. Therefore, the task force believes that enabling technology will be recognized as an asset less frequently than core technology had been previously recognized.

6.57 *Technology Migration.* Enabling technology is different from *technology migration* which, for purposes of this guide, is defined as the technology that is used or reused within a product or product family. In other words, technology migration represents reuse of "old" technology in combination with "new" IPR&D technology or "new" future, yet to be defined technology. Therefore, the concept of technology migration is that technology is reused from one product generation to the next product generation. In contrast to enabling technology, technology migration is only shared within a product or product family. Values of different stages of technology within the technology migration concept would be encompassed either in developed products (for developed technology), in IPR&D (for future technology that is under development), or in goodwill (for future yet to be defined technology.) For example, technology migration in the software and electronic devices industries might be represented by Version 1 being modified and partly reused in Version 2, whereas in the life science industry, it may be the use of a particular small molecule for one indication that later may be used for another indication.

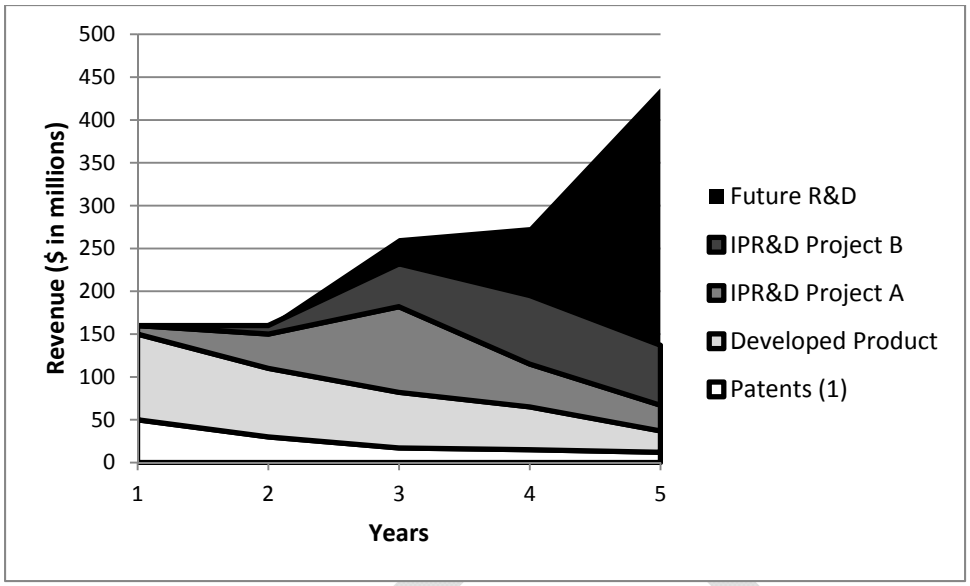
6.58 Two primary stratifications of technology to consider are: (*a*) type (or subcomponents), and (*b*) stage. For type of technology, an example is enabling technology (such as operating system) versus product technology (such as application software to be used with the operating system). Although a given software product may use both types of technology, these technologies are distinct in that they may become obsolete over different time periods because enabling technology typically decays more slowly than product technology. For stage of technology, it should be noted that both enabling and product technology may have developed versions, versions under development, or future, yet to be started versions. The following paragraph further discusses the interplay between type and stage of technology.

6.59 A current product's attributes and characteristics (known as functionality) are often the result of the functionality of prior versions or releases of the product (referred to as *technology migration*) and the functionality that was added as a result of the release of the current product (referred to as *developed product technology*). As future versions of the products are released, the revenue generated by those future products also will be a result of R&D that is undertaken in the future (referred to as *future R&D* or *future technology*). On occasion, there may be a direct correlation between a technology project and a new product offering. When the subcomponents of technologies used in R&D activities are used by many product offerings, or when the subcomponents will be used over numerous generations of product offerings, the valuation specialist would need to assign a portion of the revenue stream from each product offering to the subcomponents. The assigning of cash flows to the subcomponents would consider the relative contribution of enabling technology, developed product technology, current R&D projects, and future technology over successive releases of products that incorporate these subcomponents.

When determining the contribution of each subcomponent of technology, the task force recommends evaluating factors which may include the following:

- Historical cost to develop the subcomponent
- Dates that the development of the subcomponent began and was completed
- Economic useful life of the subcomponent
- Relative complexity of technical issues addressed and resolved by the subcomponent
- Whether the subcomponent represents unique or proprietary technology or an alternative solution to other technologies in the marketplace
- Whether the subcomponent is (or could be) protected by patents and, if so, the difficulty of designing around the patented technology of the subcomponent
- Whether the technology in the subcomponent allows the company to generate larger PFI, either through the ability to charge premium prices for the product, sell larger volumes of the product, or increase the economic life of the product
- Other factors depending on specific facts and circumstances

6.60 The following figure illustrates the contribution of the technology subcomponents to the prospective revenue included in the final PFI. In year 1 (the year immediately following the valuation date), a significant portion of the prospective revenue is attributed to the developed product technology (that is, the products that existed at the date of valuation) with assistance from the enabling technology, whereas in year 5, a significant portion of the prospective revenue is attributed to R&D that will be performed subsequent to the date of valuation, which, outside of existing IPR&D projects, does not relate to a recognizable asset.



[1] Please note that patents would be viewed in this diagram as meeting the recognition criteria and qualifying as a separate unit of account and would be defined as a form of enabling technology.

6.61 The valuation of the various subcomponents of a business, such as those shown in in the preceding figure, may be performed by using the following methodologies:

- Adjustments to revenues and costs to eliminate everything but revenues and costs associated with a specific IPR&D asset (known as revenue, profit, or cash flow splitting).

- Contributory asset charges related to developed product technology and enabling technology (charges that may decrease over time) and future technology (charges that may increase over time). As will be described further within this section, this technique is associated with the application of the multiperiod excess earnings method.

- Other appropriate methods, when applicable.

6.62 The revenue, cash flow, or profit-splitting method may be appropriate in circumstances in which a company has one of the following: numerous separable businesses, products, or services, or in the case of technology, numerous subcomponents such as enabling technology, developed product technology, in-process technology, and future technology. When the subject assets (or some subset thereof) produce measurable economic benefit only in combination with one another, the task force believes that the best way to isolate individual asset values is through a revenue, cash flow, or profit-splitting exercise. The task force believes that the splitting of revenues, cash flows, or profits in this fashion for technology may be a preferable alternative, when applicable, to that of applying contributory asset charges (or economic rents) for the use of enabling or developed technologies. Contributory asset charges are discussed in detail in paragraphs 6.77–6.93.

6.63 *Example—technology migration*. Company A acquired Company X in a business combination. Company X releases annually a major new version of its software products. At the acquisition date, Company X has under development the second release of a software product (that is, Version 2 or V2). Historically, each release has doubled the functionality of the product, and Company A expects this to continue. The relative contributions over multiple releases (that is, the technology migration) are estimated as illustrated in table 6-1.

Table 6-1

	PFI Year				
	1	**2**	**3**	**4**	**5**
Developed product technology (Version 1)	100.0%	50.0%	25.0%	12.5%	6.0%
In-process technology (Version 2)	0.0%	50.0%	25.0%	12.5%	6.0%
Future technology	0.0%	0.0%	50.0%	75.0%	88.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

6.64 Upon acquisition, Company A concludes that Version 2 qualifies as an IPR&D asset. Accordingly, the percentage of annual prospective revenues attributable to the IPR&D subcomponent of the product (that is, Version 2) would be only 50 percent of the prospective revenues for year 2 (the year in which Version 2 is initially released), 25 percent of the prospective revenues for year 3, and so forth. Therefore, technology migration affects the revenue estimate for an IPR&D asset being valued. In this example, no revenue is presumed to be assigned to enabling technology in the revenue split. In cases in which enabling technology is present and when the valuation specialist is using the multiperiod excess earnings method, the cash flows attributable to the IPR&D asset would include a contributory asset charge associated with the enabling technology used by, or incorporated in, the IPR&D asset. The multiperiod excess earnings method and contributory asset charges are discussed in detail in the following sections.

6.65 A number of factors would need to be considered by Company A in estimating the relative contributions of the subcomponent technologies (for example, the number of lines of code added or changed) and the functionality of the product that was added or changed by each subcomponent. The valuation specialist would gather the underlying support for the assigned revenue split percentages based on discussions with management, which may include representatives from R&D, marketing and sales, finance, operations, and others, regarding historical and future expectations of relative subcomponent contributions, through industry data, and the valuation specialist's experience with similar companies and technologies.

6.66 Even when using a valuation model that splits revenues, it may be necessary to separately recognize and value enabling technology because it meets the recognition criteria and derives its

economic value from its use with many products or product families, as well as ongoing developmental efforts. Strictly speaking, such technology no longer exhibits the one-to-one correspondence that a single-product technology migration model might indicate. The consideration of a simulated royalty is one alternative to a revenue split model, as it effectively "profit-splits" the income stream. That royalty also may be applied against future revenues to capture continued reuse of the enabling technology. It should be noted that in a valuation model that splits revenues, profits, or cash flows, it is important to properly consider all completed technology, both enabling and developed product technology. In the valuation of an IPR&D project, if the split includes a category that properly comprises both enabling and developed product technology, then no further disaggregation may be necessary. However, if the split of revenue or profits considers only the migration of developed product technology, then, to the extent that enabling technology exists, it may be necessary to provide for a separate category comprising enabling technology.

6.67 A common approach to valuing technology is to start with an aggregate prospective revenue that includes the contribution of both enabling and product technologies. That portion of the aggregate revenue stream attributable to enabling and product technology, respectively, may decay at different rates. Product revenue streams would then be split between the stage of technology, that is, developed, IPR&D, and future R&D within each type of technology. If revenue associated with enabling technology is not separately split out, then a simulated royalty can be used to isolate the profits or cash flows to be associated with enabling technology, when applicable.

6.68 From a unit of account perspective, the use of two categories of technology (enabling/developed and in-process) versus three categories of technology (enabling, developed, and in-process) is significant if the categories of enabling and developed product technology have different economic useful lives. (As stated previously, if a category of technology meets the applicable criteria for separate recognition from goodwill, then the category of technology would be valued, recognized, and amortized.) However, if the useful lives are the same, then when valuing an IPR&D project, developed product technology and enabling technology may be combined into one category in a valuation model that "splits" revenues, cash flows, or profits among developed technology, in-process technology, and future technology.

6.69 Once the prospective revenues attributable to a specific IPR&D asset have been properly isolated, the valuation specialist would also need to isolate those expenses related specifically to that asset. These expenses include costs of sales, selling and marketing expenses, general and administrative expenses, R&D costs to complete the development of the IPR&D asset, maintenance R&D costs (including only ongoing changes to debug or maintain technology once complete), any one-time rollout or launch costs, and income taxes. Unrelated expenses, including costs of financing and future developmental R&D, are not deducted in arriving at after-tax cash flows. The following is a brief discussion of some of the expenses that may need to be reflected in the PFI and related considerations:

- *Technical support expense attributable to IPR&D.* In many industries, technical support is provided as part of product sales or in exchange for product maintenance fees. To the extent that such fee revenues are included in the expected future cash

flows attributable to specific IPR&D projects, it would be appropriate for the associated expense to be included in the expected future cash flows. Often, technical services cannot be unbundled from the product sale and, therefore, the appropriate level of expense would need to be reflected in the PFI.

- *R&D expense attributable to IPR&D.* In the case of an IPR&D asset, there is generally a significant upfront expense related to R&D costs to complete. Also, there are typically ongoing expenses that may be incurred by the R&D staff subsequent to project completion that may relate to maintenance, debugging, postmarket approval surveillance, and other activities. The product roadmap of the subject company, combined with R&D budgeting documents, will often serve as primary source material evidencing appropriate levels of costs to complete and ongoing expenditures. A useful cross-check is to compare all project costs-to-complete and ongoing expenditures per year with the total R&D budget or R&D expense as a percentage of sales historically for the subject company, reporting entity, or both, and for market participants, when relevant data is available.

- *Tax expense attributable to IPR&D.* When choosing the appropriate tax rate, it is important to ensure that it does not reflect specific tax circumstances of the subject company, reporting entity, or both, which may occur by consideration of net operating loss carryforwards, tax penalties, special payments, and so forth. Instead, industry data demonstrating the tax rates experienced by market participants would need to be considered and compared with company-specific data and statutory rates. See paragraphs 6.116–6.125 of this chapter for guidance on the impact of income taxes on the determination of fair value of subject assets.

Step 5: Compare the PFI attributable to the IPR&D assets to the PFI for the overall entity

6.70 In comparing the PFI attributable to various IPR&D assets to the PFI of the overall entity, certain expenses related to liabilities separately recognized in the overall business PFI would need to be removed from the cash flows related to a specific IPR&D asset. For instance, cash flows related to contingent assets or liabilities, such as potential legal settlements, pension accruals, warranty accruals, and the like, would also need to be removed from the cash flows. If the prospective cash flows of such contingencies are not removed from the cash flows used to measure the fair value of IPR&D assets, the contingency may be double-counted in the analysis when those same cash flows are used to value the contingent asset or liability itself. However, there may be similar expenses that are not related to a separately recognized liability that would need to be included in the specific IPR&D asset's cash flows.

6.71 As mentioned previously, some IPR&D assets may have related liabilities that may need to be considered separately from an accounting perspective. When the risk associated with such assets diverges from that of related liabilities, the valuation specialist needs to reflect differences in risk profiles in the respective measurements of the associated units of account.

6.72 Management may provide separate PFI attributable to specific IPR&D projects, which, when aggregated with all assets, may not add up to the PFI for the overall entity. Such

differences would need to be documented and reconciled by management. For instance, one outcome of this process could be that the overall PFI may need to be reconsidered.

6.73 Once the revenue and expenses related to IPR&D activities have been appropriately isolated and compared to the overall PFI, the result can be used to value IPR&D assets by applying various income-based valuation methods, such as the multiperiod excess earnings method, relief from royalty method, decision tree analysis, or the real options method, many of which are discussed in detail in the following sections.

Application of the Multiperiod Excess Earnings Method to IPR&D Assets

Overview

6.74 The multiperiod excess earnings method is one of the methods used by valuation specialists to measure fair value of IPR&D assets acquired in a business combination, asset acquisition, or, subsequently, for impairment testing and measurement purposes.

6.75 In cases in which there is an identifiable stream of cash flows associated with more than one asset, a multiperiod excess earnings method may provide a reasonable indication of the value of a specific asset. Under this method, the value of an intangible asset is equal to the present value of the after-tax cash flows attributable solely to the subject intangible asset, after making adjustments for the required return *on* and *of* the other associated assets.

6.76 Once the PFI related to IPR&D activities has been isolated (as discussed in the "Use of Prospective Financial Information" section of this chapter), the application of the multiperiod excess earnings method generally involves the following steps:

- Step 1: Apply contributory asset charges for assets that contribute to the generation of cash flows.
- Step 2: Calculate the present value of the cash flows using a discount rate appropriate for the specific IPR&D asset being valued.[8]
- Step 3: Compute and add the related income tax benefits resulting from the amortization of the IPR&D asset for income tax purposes.[9]
- Step 4: In the case of a transaction, evaluate the overall reasonableness of the asset's fair value relative to the other assets acquired and the overall purchase price. In other circumstances, compare the fair value of individual IPR&D assets to the overall fair value of the entity and to the fair value of the other assets owned by the entity.

[8] Some have suggested that a variant of this step would be to apply different discount rates depending on the risk profile of upfront expenses versus future benefits.

[9] The need to include the benefits of tax amortization will depend on which tax jurisdiction the intangible asset is located, or would be located, from a market participant perspective.

Step 1: Apply contributory asset charges for assets that contribute to the generation of cash flows[10]

6.77 Specifically, under the multiperiod excess earnings method, the estimate of an intangible asset's fair value starts with the PFI associated with a collection of assets rather than a single asset. *Contributory asset charges*, also referred to as *economic rents* or *capital charges*, are then deducted from the net cash flows for the collection of the associated assets to isolate "excess earnings" attributable solely to the intangible asset being valued. The contributory asset charge is a deduction for the contribution of supporting assets (for example, net working capital, fixed assets, customer relationships, trade names, and so forth), as required by market participants, to the generation of the prospective cash flows attributable to the particular asset being valued. An asset charge is applied for each asset, including other intangible assets, which contribute to the generation of the prospective cash flows. The contributory asset charges are based on the fair values of the contributing assets (for example, fixed assets). After-tax cash flows of the collection of assets are often charged after-tax amounts representing a return *of* and a return *on* these contributory assets based on the fair values of such contributory assets to estimate the fair value of the subject asset. The excess cash flows, net of the charges for contributory assets, are then discounted to a present value.

6.78 The principle behind a contributory asset charge is that each IPR&D asset "rents" or "leases" from a hypothetical third party all the assets it requires to produce the cash flows resulting from its development, that each project rents only those assets it needs and not the ones that it does not need, and that each project pays the owner of the assets a fair return *on* (and *of*, when appropriate) the value of the rented assets.[11] Thus, any net cash flows remaining after such charges are attributable to the subject IPR&D asset.

6.79 The contributory assets for which a charge should be taken include not only assets purchased in the specific transaction or existing in a particular point in time, but all assets which would be required by market participants to generate the overall cash flows of the collection of assets. The reporting entity already may own some of these assets or may need to purchase them in a separate transaction, if they are necessary to generate the expected future cash flows in the aggregate. For example, in the case of a transaction, the acquiring company may plan not to use the trade name of the subject company but to replace it with a newly developed name. In this case, provided such plans are consistent with market participant assumptions, a contributory asset charge for use of the newly developed name would need to be applied despite the fact that

[10] For further information on contributory asset charges, see the Appraisal Foundation document setting forth best practices for *The Identification of Contributory Assets and the Calculation of Economic Rents* (the Appraisal Foundation document), which is available at the Appraisal Foundation's website at https://appraisalfoundation.sharefile.com/d/s80f9c7da9e744de9.

[11] From the perspective of an investment in contributory assets, an owner of such assets would require an appropriate return on investment, which consists of a pure investment return (what is referred to as return *on*) and a recoupment of the original investment amount (what is referred to as return *of*). (This explanation is based on the explanation in paragraph 1.6 of the Appraisal Foundation document.)

the acquired name will no longer be used. Additionally, if the acquiring company plans not to use the acquired trade name and sell only unbranded products, but market participants would choose to maximize cash flows by using a trade name in their marketing of the product, a contributory asset charge for use of the trade name would be applied in order to perform the valuation on a market participant basis.

6.80 *Types of contributory assets*. Contributory asset charges would need to be made for all assets or elements of goodwill that contribute to the realization of the expected future cash flows. Similarly, contributory asset charges would not be made for assets that do not contribute to the expected future cash flows (for example, land held for investment would not be considered as a basis for a charge if it is not necessary for the generation of future cash flows).

6.81 Assets contribute to future cash flows by supporting the realization of those cash flows. Examples of assets that may be charged for and the type of contributions that they make include the following:

- *Working capital*. Realizing cash flows from the commercialization of a new product or service requires working capital for net investment in receivables, inventory, and other short-term assets. Working capital makes a contribution to the project by allowing and supporting the normal business cycle. The appropriate level of working capital to use as a contributory asset is a required level of working capital. This required level represents the level that market participants would consider appropriate to support the subject intangible asset. As working capital supports business operation without loss in value due to economic depreciation, only a return *on* working capital would be considered in contributory asset charge calculation. Note that the composition and level of working capital may change as an asset moves from development to production and, therefore, the level of charge could be different year by year over the prospective period.

- *Fixed assets*. Fixed assets allow for the physical production of products; the workspace for the marketing, sales, and logistics functions for both tangible and intangible products; and the facilitation of general management functions and corporate overhead. Although the exact nature of the contribution of a particular desk to a specific IPR&D project is most likely unknowable, a reasonable estimation would be used (for example, assigning fixed asset charges on the basis of revenue). Fixed assets mostly are "wasting" assets that require replacement or replenishment, or both, to sustain their productive capacity. Both return *of* and return *on* fixed assets would be charged to the intangible assets that those fixed assets support. Note that similar to net working capital, the composition and required level of fixed assets may change as an asset moves from development to production and, therefore, the level of charge could be different year by year over the prospective period.

- *Intangible assets*. In addition to the preceding, business combinations may include other assets. Paragraphs 11–45 of FASB ASC 805-20-55 include examples of intangible assets that meet the criteria for recognition as a separate asset apart from goodwill, including marketing-related intangible assets, customer-related intangible

assets, artistic-related intangible assets, contract-based intangible assets, and technology-based intangible assets. In addition, certain elements of a business may make a contribution to expected future cash flows even if they are not recognizable as intangible assets under FASB ASC 805, such as assembled workforce and trained staff. In all cases, required levels of intangible assets would serve as a basis for applying contributory asset charges. For further discussion about the potential for applying contributory asset charges for elements of goodwill other than recognizable intangible assets, refer to paragraphs 2.2.14–.16 in the Appraisal Foundation document setting forth best practices for *The Identification of Contributory Assets and the Calculation of Economic Rents* (the Appraisal Foundation document).

6.82 The task force believes that in calculating the contributory asset charge associated with self-created assets (such as customer lists, assembled workforce, or trade names), it is often appropriate to assume that costs to maintain and enhance intangible assets, that is, return *of* those intangible assets, are part of the operating expense structure of the entity's business and, as such, only return *on* contributory intangible assets will be charged to the subject intangible asset. Prospective expenses would need to be analyzed to determine the appropriate level of maintenance and enhancement costs included in relation to the full return *of* the subject assets. For example, maintenance R&D expense, as opposed to total R&D (that is, maintenance and developmental R&D) expense, would be considered in the analysis.

6.83 Note that the approach outlined previously is deemed reasonable for intangible assets that are valued on a replacement cost basis, that is, their value is replenished based on a prospective expense or cost. However, for self-created assets that generate an excess return, the prospective expense may only capture the maintenance expense, which may lead to a potential understatement of the charge for the asset. For example, for a trade name, which may be valued using the relief from royalty method, the royalty rate is typically a portion of profit after deducting the maintenance expense. In other words, the royalty rate captures the excess profit from the trade name above and beyond the maintenance cost and, therefore, is assumed to incorporate both the return *on* and *of* that asset. In such cases, prospective expenses may also need to be adjusted downward to avoid a duplicate charge for the return *of*.

6.84 As with working capital and fixed assets, a return would be charged for the use of each intangible asset as appropriate. However, a careful analysis would be made to determine which assets contribute to which projects. Many contributory assets benefit most or all projects, including current technologies. The total return earned by an asset would need to be assigned across the projects that benefit from that asset. For example, a project that uses twice as much of a contributory asset than another project would incur twice the contributory asset charge. When objective information is available, it would provide the basis for assigning contributory asset charges. In the absence of reliable data, reasonable assumptions would be used. Although contributory asset charges generally are assigned to projects based on the relative revenue of each project, this approach may not always be correct. For example, IPR&D projects may not generate revenue in the first few years of the prospective period. In such cases, relative expenses of each subject intangible asset each year may represent a more appropriate assignment basis. When an asset is not expected to contribute to a particular project, its return is not charged against that project (its return is, however, charged against all the projects to which it does make

a contribution).

6.85 *Basis for determining charges*. Contributory asset charges are based on the concept that the owner of that asset reasonably expects to get a return *on* and *of* the fair value of the asset that is commensurate with the risk of that asset and the returns earned by market participants on similar assets. The valuation specialist should take care to note circumstances when the carrying value of the asset is not the same as its fair value, the latter of which should be the base for contributory asset charge.

6.86 The required level of contributory assets may be expected to remain relatively constant over time. For example, working capital may be assumed to remain a constant percentage of sales and, therefore, would be expected to change as the level of prospective sales changes.

6.87 The valuation specialist would also need to consider the possibility that the level of required contributory assets may change over time. For example, a technology-based business may have high scalability relative to fixed assets and possibly other assets (for example, a software company may be able to grow revenue ten-fold without significantly increasing its fixed assets). Thus, applying a stable charge for the entirety of the prospective period would not be appropriate in this case. In summary, the capacity and current asset usage expected by market participants would need to be considered in determining the required amount of each contributory asset over the life of the subject asset.

6.88 The required rates of return for the contributory assets need to be commensurate with the relative risk associated with investment in each particular asset. The level of debt financing that could be secured for a particular asset can serve as a proxy for the risk level associated with that asset. One can then estimate the market participant cost of equity and the cost of debt related to financing the subject asset. From that, the valuation specialist may use a loan-to-value ratio approach in developing the required return *on* specific classes of assets. The valuation specialist would need to evaluate how specific assets would be financed by market participants and the respective risks and rates of returns associated with those assets, rather than how the overall entity may be financed.

6.89 The following table provides examples of assets typically charged for and the basis for determining the fair return, and in many cases, the return *of* the asset is reflected in the operating costs when applicable (for example, intangible assets valued under the cost approach). The contributory asset charge is the product of the asset's value and the required rate of return *on* the asset (and *of* the asset, in cases when investment recapture is not part of the operating costs.) For each asset listed in the following table, the valuation specialist would consider the level of debt and equity financing required to fund that specific asset.

Asset	***Basis of Charge***
Working capital	Blend of short-term lending rates (for example, working capital lines or short-term revolver rates) and cost of equity for market

	participants.
Fixed assets (for example, property, plant, and equipment)	Blend of a financing rate for similar assets for market participants (for example, terms offered by vendor financing, rates on longer term borrowings, or rates implied by operating leases, capital leases, or both (typically segregated between return of [that is, recapture of investment] and return on asset), and cost of equity.
Workforce (which is not recognized separate from goodwill), customer lists, trademarks, and trade names	Frequently, the weighted average cost of capital (WACC) (may be lower than discount rate applicable to a particular project).
Patents, including other types of enabling technology	Frequently, the WACC (may be lower than discount rate applicable to a particular project). In cases when risk of realizing economic value of patent is close to, or the same as, risk of realizing a project, rates would be equivalent to that of the project. Additionally, when a contributory asset is itself valued using a relief from royalty method (which is commonly the case with patents and enabling technology), the royalty rate assumed is, in essence, a substitute for a contributory asset charge (economic rent for the use of the asset). In other words, the royalty rate can be assumed to incorporate the return *on* and *of* that asset. Thus, the contributory asset charge for use of that asset would be set equal to its royalty rate multiplied by the relevant revenue amount (adjusted for taxes if contributory charges are taken against after-tax cash flows).
Other intangibles	Rates appropriate to the risk of the subject intangible. Market evidence would be used whenever available. In other cases, rates would need to be consistent with the relative risk of other assets in the analysis, with rates being higher for riskier assets. Additionally, intangible assets typically are not financed with significant debt and, therefore, would

	require a higher proportion of equity financing.

6.90 When the asset is unique to the entity and has limited value in exchange, the required return would likely be closer to the overall WACC or even the entity's cost of equity than when the asset is easily liquidated and is more generic in nature. For example, tangible assets specifically used in a utility company may have a risk profile similar to the overall entity's risk, thereby warranting a rate of return closer to the WACC; whereas tangible assets not unique to a particular industry would likely have lower risk relative to that of the overall entity. Generally, the risk associated with specialized inventory, fixed assets without alternative uses, and intangibles would be considered similar to the risk of the overall entity and, therefore, a return closer to the WACC would be applied.

6.91 *Contribution for elements of goodwill*. The general principle of contributory asset charges is to provide a return on the fair value of all assets necessary for the realization of the cash flows. In order to avoid capturing elements of goodwill in the fair value of a specific intangible asset (such as an IPR&D asset), some valuation specialists have argued that taking contributory asset charges for elements of goodwill would serve as a remedy. However, although the task force acknowledges that taking a contributory asset charge for an element of goodwill that contributes to the generation of cash flows has conceptual merit, the task force believes that only in very limited circumstances would an element of goodwill be identifiable and reliably measurable (such as assembled workforce).

6.92 *Period of charge*. Contributory asset charges are applied over the period that the subject project requires such assets. For example, if a project requires an asset that has an economic life of three years but the project has a life of six years, the contributory asset charge would be applied over the entire six years. The assumption is that the investment in that asset is replaced over time as the asset is depreciated or amortized and that the subsequent new investment requires the same type of return as was required by the original investment. This would not be the case, however, for assets which are not otherwise replaced and simply expire (for example, a covenant not to compete).

6.93 *Tax amortization benefit*. As discussed further in this chapter, when measuring the fair value of intangible assets, current practice is to include a tax amortization benefit (TAB) for assets regardless of whether they were acquired in a taxable or nontaxable transaction. Because the goal of fair value measurement is to determine an exit price for the asset, the fair value of the asset itself would be expected to include its inherent tax benefits of amortization or depreciation. Further, charges for contributory assets should be based on the fair value of assets inclusive of those same tax benefits of depreciation or amortization because the resulting fair value would be the basis for economic rent if such contributory assets were to be truly leased.

Step 2: Calculate the present value of the cash flows using a discount rate appropriate for the specific IPR&D asset being valued

6.94 Conceptually, a discount rate represents the expected rate of return (that is, yield) that an investor would expect from an investment. The magnitude of the discount rate depends on the perceived risk of the cash flows being discounted. Theoretically, investors are compensated, in part, based on the degree of inherent risk and, therefore, would require additional compensation in the form of a higher rate of return for investments bearing additional risk.

6.95 FASB Concepts Statement No. 7, *Using Cash Flow Information and Present Value in Accounting Measurements*,[12] and paragraphs 4–20 of FASB ASC 820-10-55 provide a framework for determining the appropriate discount rate for cash flows with a specific risk profile. They describe two basic techniques: the discount rate adjustment (or, traditional) technique (DRAT) and the *expected present value* (or, expected cash flow) *technique* (EPVT). The DRAT is based on a single outcome that is conditional upon the occurrence of specific events. For example, the cash flows may reflect a single "most likely" or "promised" cash flow scenario that contains an assumption about the outcome of an uncertain future event, such as U.S. Food and Drug Administration (FDA) approval. The EPVT, however, represents a probability-weighted average of all possible outcomes. Because expected cash flows incorporate expectations of all possible outcomes, expected cash flows are not conditional on particular events or outcomes.

6.96 In either case, the overriding principle contained in those techniques is that the discount rate used to discount the prospective cash flows should reflect assumptions that are consistent with the risks inherent in the cash flows. Conditional cash flows are discounted using a conditional rate, and expected cash flows are discounted using an expected rate. In theory, the two techniques consider the same risks; the DRAT reflects the risk through adjustments to the discount rate, whereas the EPVT primarily reflects this risk in the expected cash flows.

6.97 There are two methods under the EPVT, which are described in paragraphs 13–20 of FASB ASC 820-10-55. Method 1 of the EPVT (subsequently referred to as *EPVT Method 1*) adjusts the expected cash flows of an asset for systematic (that is, market) risk by subtracting a cash risk premium (that is, risk-adjusted expected cash flows). In contrast, method 2 of the EPVT (subsequently referred to as *EPVT Method 2*) adjusts for systematic (that is, market) risk by including a risk premium in the discount rate.

6.98 EPVT Method 1 is the appropriate technique when the expected cash flows have been adjusted to arrive at certainty equivalents, allowing the results to be discounted at an appropriate risk-free rate. However, aside from techniques, such as Black-Scholes, that use a risk neutral

[12] It should be noted that the FASB Concepts Statements were not codified and do not represent authoritative accounting principles generally accepted in the United States of America (U.S. GAAP). The FASB Concepts Statements are available at www.fasb.org/jsp/FASB/Page/SectionPage&cid=1176156317989.

However, the task force believes that FASB Concepts Statement No. 7, *Using Cash Flow Information and Present Value in Accounting Measurements*, provides relevant guidance and, therefore, included references to it in this guide.

framework, the task force believes that method 1 is rarely used in practice. EPVT Method 2 is the appropriate technique when the expected cash flows represent the probability-weighted cash flows from multiple scenarios, which address risks except for those that are systematic in nature. Such probability-weighted cash flows are discounted at a rate of return that includes a premium for systematic risk.

6.99 FASB ASC 820-10-55-16 suggests that, all else equal, the DRAT discount rate is likely to be higher than the EPVT Method 2 rate, assuming that conditional cash flows may contain an element of risk that is eliminated when probability-weighted cash flows are employed. Because it is applied to a certainty-equivalent cash flow, the risk-free rate developed pursuant to EPVT Method 1 would be lower than either of these other two techniques. A summary follows:

- Highest rate: DRAT (conditional)
- Mid-rate: EPVT Method 2 (systematic risk)
- Lowest rate: EPVT Method 1 (certainty equivalent)

6.100 It is important to note, as further discussed in paragraph 6.102, that FASB ASC 820 does not limit the use of present value techniques to measure fair value to these three choices. There are many elements of risk that may be handled by adjusting either the level of expected cash flows or the discount rate, or both. For example, if the most likely scenario is not explicitly conditional, but the prospective cash flows in this scenario are greater than the probability-weighted cash flows would be, then the appropriate discount rate would likely be based on a "mixed" model, lower than a DRAT rate, higher than an EPVT Method 2 rate, and utilizing elements from both techniques. This could be the case in situations in which the distribution of expected cash flows, including the most likely scenario, is "skewed to the right" as opposed to being symmetrical.

6.101 "Mixed" models are often employed in the pharmaceutical industry in situations when technical risks, such as risk of receiving FDA approvals, may already be considered in the PFI, whereas probabilities associated with the timing of the approvals may not be explicitly factored into the PFI development. Both elements associated with approvals and timing of such approvals can have a meaningful effect on value. In addition, commercialization risks, such as market acceptance risks, may also not have been explicitly considered in the PFI. In such circumstances, a "mixed" model would be used in the determination of an appropriate discount rate whereby certain adjustments to the WACC may be warranted to account for the uncertainty with respect to the timing of approval or commercialization risks, or both.

6.102 To offer some historical perspective, FASB Concepts Statement No. 7, issued in 2000, provides guidance for using present value techniques to measure fair value. (However, as noted in footnote 12 in paragraph 6.95, FASB Concepts Statement No. 7 was not codified and does not represent authoritative U.S. GAAP.) FASB Statement No. 157, *Fair Value Measurements* (codified in FASB ASC 820), issued in 2006, clarified that guidance in its appendix B. In FASB Concepts Statement No. 7, FASB expressed a preference for the use of EPVTs in connection with the measurement of nonfinancial assets and liabilities for which no market for the item or a

comparable item exists (see paragraphs 44–45 of FASB Concepts Statement No. 7). However, appendix B of FASB Statement No. 157 indicates that it

> neither prescribes the use of one specific present value technique nor limits the use of present value techniques to measure fair value to the techniques discussed herein. The present value technique used to measure fair value will depend on facts and circumstances specific to the asset or liability being measured (for example, whether comparable assets or liabilities can be observed in the market) and the availability of sufficient data (see paragraph B1 of FASB Statement No. 157).

Furthermore, in paragraph C61 of FASB Statement No. 157, FASB acknowledged inconsistencies between FASB Concepts Statement No. 7 and FASB Statement No. 157 and stated its decision not to revise FASB Concepts Statement No. 7 at that time to conform it to FASB Statement No. 157. However, FASB indicated that it would consider in the future the need to revise FASB Concepts Statement No. 7. Although FASB Concepts Statements have not been codified, appendix B of FASB Statement No. 157 has been codified in paragraphs 4–20 of FASB ASC 820-10-55 (the language from paragraph B1 of FASB Statement No. 157 quoted previously appears in FASB ASC 820-10-55-4).

6.103 Generally, if applied properly, both the DRATs and EPVTs would be expected to produce consistent results. The task force believes that use of the EPVT would provide added transparency for valuing assets used in IPR&D given the nature of these assets and their associated cash flows. For example, for assets related to IPR&D projects that are still in trial stages and subject to risks, such as the risk of reaching the necessary scale of operation, the risk of obtaining the necessary regulatory approval, or the uncertainty associated with meeting sales targets once requisite approvals have been obtained, it is often more straightforward to model these risks directly in the cash flows rather than in adjustments to the discount rates. The task force also recognizes that valuation specialists are often faced with a single scenario with respect to PFI and that scenario may have risks that can only be accounted for under the DRAT or a "mixed" model (described previously).

6.104 Both the DRAT and EPVT involve subjectivity either in selecting an appropriate discount rate or in assigning probabilities to cash flow outcomes. The DRAT implies that a similar asset with similar cash flow characteristics exists in the marketplace, and the rate of return implicit in its market price may be derived. However, the task force observes that for many unique nonfinancial assets, including IPR&D, it may be difficult to identify exact comparables in the marketplace and, thus, in order to apply this technique, it may be necessary to derive a discount rate from observable data for similar assets or entities.

6.105 The task force believes that the valuation report should include a description of the nature of the PFI employed (for example, conditional, probability-weighted, and so forth) and the type of discount rate selected (conditional versus expected).

6.106 *Return of the overall entity*. As a starting point for estimating the rate of return warranted by specific assets, the valuation specialist would begin by analyzing the return expected to be earned from the overall entity. In order to derive this entity return, the valuation specialist would

generally start by calculating an industry WACC. The WACC should reflect the weighted-average rate of return on debt and equity as required within the industry, adjusted to reflect return requirements of market participants.

6.107 As a helpful diagnostic, the valuation specialist would also look to the internal rate of return (IRR) implied by the acquisition (in the case of an acquisition of a business) to obtain an additional indication of the overall entity's return. After the market participant PFI has been determined (that is, entity-specific synergies have been removed), the IRR is derived by equating the sum of the prospective cash flows on a present-value basis to the consideration transferred, which assumes that the amount paid represents fair value. Because PFI generally represents the cash flows expected from the acquiree's operating assets and liabilities, the calculation of the IRR would also need to consider adjustments when nonoperating assets or liabilities exist. In the case of an acquisition of assets that do not constitute a business, a use of the IRR calculation as a diagnostic may be difficult. The IRR can also be used to assess the calculation accuracy of the WACC. However, valuation specialists should be careful to not use it simply to adjust the WACC calculation because under certain circumstances, such as bargain purchases, IRR and WACC may deviate from each other.

6.108 Conceptually, the IRR should be consistent with the WACC.[13] This should be the case for all types of PFI, such as conditional, probability-weighted, and PFI with "mixed" attributes, as discussed previously. If the implied IRR and WACC differ, it may be an indication that entity-specific synergies are included in the PFI, that cash flows are not consistent with the expectations of market participants, or that the price paid for the business was not representative of its fair value. If such a scenario exists, the valuation specialist would analyze the assumptions in the PFI to ensure that only market participant assumptions are reflected (that is, excludes entity-specific synergies or biased PFI) to derive expected cash flows for the overall entity and asset. Alternatively, if there is evidence of the price not reflecting fair value, the valuation specialist would need to impute fair value for the acquisition if that imputed value is to be used in WACC-WARA-IRR comparison.

6.109 The following summarizes the relationship between the IRR and WACC and the implications for the selection of PFI in the instance of a business combination:

IRR = WACC	Indicates that the PFI likely properly reflects market participant assumptions, and the transaction consideration is likely representative of the fair value.
IRR > WACC	Indicates that the PFI may include some or all of the impact of entity-specific synergies, may reflect an optimistic bias, may reflect a bargain purchase, or all three.

[13] Common definitions of *weighted average cost of capital* (WACC) include the use of WACC with expected cash flows. Because this guide discusses both conditional and expected cash flows, WACC in this guide may also refer to *adjusted WACC*, which is intended for use with conditional cash flows, such as those used in the *discount rate adjustment technique.* A conditional internal rate of return would be conceptually similar to an adjusted WACC.

IRR < WACC	Indicates that the PFI may exclude some or all of the impact of market participant synergies, may reflect a conservative bias, may reflect an overpayment, or all three.

6.110 Once the WACC (and IRR, when appropriate) has been determined, the valuation specialist would assess the risk profile of the various assets being valued relative to that of the overall entity. To the extent that the cash flows identified for a given asset are subject to more risk than those of the overall entity, that asset would warrant a discount rate higher than the WACC. Conversely, assets whose cash flows are subject to less risk would warrant a discount rate below the WACC.

6.111 IPR&D assets may be subject to greater risk than those assets related to other, more established business activities. There may be instances when the required rate of return for an IPR&D project may not be significantly different than the rate for existing technology, if, for instance, it was building off similar existing technology. The valuation specialist would assess the level of risk to be reflected in probability adjustments to the PFI and the remaining level of risk to be reflected in increases to the discount rate used to discount prospective cash flows. Specifically, the valuation specialist would need to consider whether the cash flows associated with the underlying IPR&D assets being valued reflect expected cash flows or conditional cash flows because their rates of return may be different. Generally, IPR&D assets valued using expected cash flows would have a lower required rate of return than the same assets valued using conditional cash flows because conditional cash flows include additional uncertainty. Either way, significant professional judgment is required to determine the appropriate discount rates.

6.112 As a means of testing the relative consistency of the rates of return for the various assets, a useful diagnostic is to perform a calculation of the weighted-average return on assets, or WARA. Such a calculation provides an indication of the return for the overall entity implied by the weighted-average rate of return assigned to various assets that make up the business. The purpose of the WARA calculation is to assess the reasonableness of the asset-specific returns for identified tangible and intangible assets and the implied (or calculated) return on goodwill. Because the WARA and WACC are indicators of the market participant expected return of the overall entity, the two metrics can be compared and contrasted to identify any adjustments required to the discount rates assigned to the various assets. In the case of an acquisition of assets that do not constitute a business, a use of WARA calculation as a diagnostic may be difficult.

6.113 Table 6-2 illustrates the calculation of a WARA. As shown in this table, rates of return are assigned to each asset in accordance with the asset's risk profile. The weighted-average return of all the assets provides another method of observing the return of the overall entity.

Table 6-2

Assets	Fair Value	% of Total	After-Tax Rate of Return	Weighted Avg Rate of Return
Net working capital	$ 40.0	8.9%	4.0%	0.4%
Fixed assets	60.0	13.3%	7.0%	0.9%
Trademarks / trade names	30.0	6.7%	12.0%	0.8%
Customer relationships	40.0	8.9%	12.0%	1.1%
Developed technology	50.0	11.1%	12.0%	1.3%
IPR&D	80.0	17.8%	14.0%	2.5%
Assembled workforce	10.0	2.2%	12.0%	0.3%
Residual goodwill	140.0	31.1%	18.0% (1)	5.6%
Entity's Fair Value	**450.0**	**100.0%**		**12.8%**

[1] Please note that the after-tax rate return on goodwill can be either derived on an implied basis or qualitatively estimated by a valuation specialist.

6.114 When measuring the fair value of an entity using expected cash flows, the discount rate would typically reflect the WACC of this particular entity. Historically, IPR&D assets, unlike other intangible assets, were often valued based on conditional cash flows as opposed to expected cash flows and were discounted at a rate of return that is commensurate with the riskiness of the conditional IPR&D cash flows (known as the DRAT). The WACC is consistent with the conceptual framework of expected cash flows and expected returns. The reconciliation of the WARA to the WACC implies that the returns used in the WARA should be based on expected returns for each asset as well. Because the WACC is an average expected return, implicitly, rates of return applied to individual assets must be their respective expected rates of return. However, if the discount rate for the IPR&D asset is developed for use with conditional cash flows, and the overall entity PFI were determined to be expected cash flows, then such a discount rate would not be consistent with the WACC or WARA's conceptual framework of an expected return. In the case of a transaction, the overall purchase price is often based not on conditional but on expected cash flows. The IPR&D cash flows can be adjusted for the probability of completion or weighted with downside cash flows that reflect potential development failure. If all risks, except for systematic risks, have been captured in the PFI, then a discount rate closer to the IRR or WACC, or both, may be warranted. As a result, probability-weighted cash flows generally would be consistent with the overall WACC conceptual framework.

6.115 A decision tree analysis can be used to estimate probability-adjusted cash flows, discussed in greater detail in the "Application of Decision Tree Analysis to IPR&D Assets" section. The "Comprehensive Example" section provides an example of the application of the EPVT in a pharmaceutical setting.

Step 3: Compute and add the related income tax benefits resulting from the amortization of the IPR&D asset for income tax purposes

6.116 The task force believes that the fair value of an intangible asset valued using an income

approach would include (*a*) the expected tax payments resulting from the cash flows attributable to the intangible asset, and (*b*) the tax benefits resulting from the amortization of that intangible asset for income tax purposes. These tax benefits should be based on assumptions related to the tax impacts a market participant buyer would encounter if the asset were amortizable for tax purposes. Including this TAB is common in the application of the income approach. It is not typical in the market approach because any tax benefits already would be factored into the quoted market price through negotiation between market participants. (See footnote 9 in paragraph 6.76 for further discussion of market participant tax assumptions.)

6.117 In the case of a transaction, whether the transaction is structured as an asset sale for tax purposes (as opposed to a stock sale), practice typically includes the associated tax benefits in the fair value of the assets acquired because it is assumed that the assets acquired will be amortizable for tax purposes. When a stock sale occurs without a corresponding change in the bases of assets acquired and liabilities assumed for tax purposes, some have argued that no tax benefit should be included in the fair value of the intangible assets acquired because the buyer will not amortize the intangible assets acquired for income tax reporting purposes. However, under FASB ASC 820, the fair value of the asset is an exit price, which bears no relation to the manner in which the asset was purchased. The task force believes that the exit price should include the tax benefit because individual assets generally would be sold in a taxable transaction.

6.118 This issue should not be confused with the need to apply taxes to pretax income streams to apply a particular income-based valuation method, such as a discounted cash flow method. A market participant would factor into the amount that it would be willing to pay to acquire all incremental cash flows that inure to the benefit of that market participant. Those incremental cash flows would be reduced by expected income tax payments using appropriate tax rates. The task force believes that the determination of fair value would take into account future income taxes that a market participant purchasing the asset would be expected to pay, without regard to how a transaction would be structured at the entity level for income tax reporting purposes (that is, whether a transaction would be structured to result in a change in bases of assets acquired and liabilities assumed for income tax reporting purposes). As discussed previously, the task force also believes that the fair value of an intangible asset would include the value of the tax benefit resulting from the amortization of that asset. If the value of the tax benefit resulting from the amortization of that asset were not included in the fair value of the intangible asset, it would have the impact of stating that asset on the balance sheet "net of tax." The task force believes that only after the fair value is determined would the asset's assigned value be subjected to the deferred tax accounting requirements of FASB ASC 740, *Income Taxes*. That is, the deferred tax calculation is performed only after the fair value is estimated and accounted for separately, when applicable.

6.119 The value of this TAB (when using straight-line amortization) can be calculated using the following formula:

TAB = PVCF x [1/(1-PVA*T)-1]

Where:

PVCF = Present value of cash flows excluding amortization of the asset

N = Tax amortization period and is used to determine PVA (see the following)

PVA = Present value of an annuity of 1/N paid over the tax amortization period

T = Tax rate

6.120 Table 6-3 illustrates the calculation of the TAB for an asset with a straight-line tax amortization period of 15 years (as would be the case under the current U.S. tax law).

Table 6-3

Assumptions	
Present value of asset cash flows	$ 10,000.0
Tax amortization period (years)	15.0
Tax rate:	40.0%
Discount rate	15.0%

Year	Period	Mid-point of Period	Present Value Factor	1 / Period	Present Value of Amortization
1	1.0000	0.5000	0.9325	0.067	0.0622
2	1.0000	1.5000	0.8109	0.067	0.0541
3	1.0000	2.5000	0.7051	0.067	0.0470
4	1.0000	3.5000	0.6131	0.067	0.0409
5	1.0000	4.5000	0.5332	0.067	0.0355
6	1.0000	5.5000	0.4636	0.067	0.0309
7	1.0000	6.5000	0.4031	0.067	0.0269
8	1.0000	7.5000	0.3506	0.067	0.0234
9	1.0000	8.5000	0.3048	0.067	0.0203
10	1.0000	9.5000	0.2651	0.067	0.0177
11	1.0000	10.5000	0.2305	0.067	0.0154
12	1.0000	11.5000	0.2004	0.067	0.0134
13	1.0000	12.5000	0.1743	0.067	0.0116
14	1.0000	13.5000	0.1516	0.067	0.0101
15	1.0000	14.5000	0.1318	0.067	0.0088
Present value of the annuity (PVA)					**0.4180**
Tax amortization benefit			PVCF x [1/(1-PVA*T)-1]		**$ 2,007.9**
Present value of asset cash flows					10,000.0
Fair value of asset					**$ 12,007.9**

Questions and Answers—Income Tax Benefits

6.121 *Question 1*: If Company A acquires the assets of Company X in a business combination

structured as an asset acquisition for income tax reporting purposes resulting in an increase in the tax basis of the asset, and for financial reporting purposes, the fair value of an intangible asset is measured using a discounted cash flow method, would the expected future income taxes to be paid resulting from the pretax expected future cash inflows to be generated by the acquired intangible asset be deducted from the pretax cash flows in calculating the fair value of the acquired intangible asset?

Answer: Yes. As discussed in paragraph 6.118, the application of the discounted cash flow method would capture after-tax cash flows resulting from ownership of the subject asset being valued.

6.122 *Question 2*: Assume the same set of facts as in question 1. In addition, the acquired intangible asset is deductible for income tax reporting purposes on a straight-line basis over a 15-year life. Company A values the acquired intangible assets using a discounted cash flow method with a 15 percent discount rate.[14] Further assume the following regarding the acquired intangible asset:

	Year 1	Year 2	Year 3
Estimated:			
Pretax cash flows	$1,000	$1,000	$1,000
Income taxes at 40%	400	400	400
After-tax cash flows	600	600	600
Present-value factor at15%	.8696	.7561	.6575
Present value of estimated after-tax cash flows	522	454	395
Sum			$ 1,370

This $1,370 of discounted cash flows also generates an income tax benefit from its tax amortization over a 15-year period. The present value of that benefit has been calculated to be $274, giving rise to an overall value for the asset of $1,644. Should the fair value of the intangible be $1,370, representing its value before consideration of tax deductibility, or $1,644, representing the value assuming the acquired intangible asset is amortizable for income tax reporting purposes?

[14] For ease of demonstration in this example, the same discount rate was used for the tax amortization benefit and for the underlying intangible asset. The task force notes that there is some discussion in the profession regarding whether different discount rates may apply.

Answer: $1,644. As discussed in paragraph 6.116, the fair value of an intangible asset would include the tax benefits resulting from the amortization for income tax reporting purposes of that intangible asset.

6.123 *Question 3*: Assume the same facts as in questions 1 and 2, except that the transaction was structured as a stock acquisition for income tax reporting purposes (that is, a nontaxable business combination). Because the transaction was structured as a stock acquisition instead of an asset acquisition, no change occurs in the bases of the assets acquired for income tax reporting purposes. The intangible asset under analysis has no tax basis to this buyer in this transaction. Should the fair value of the intangible asset be $1,370, representing its value without assuming tax deductibility (that is, reflecting that no tax benefits will result from the asset), or $1,644, representing the value assuming the acquired intangible asset is amortizable for income tax reporting purposes irrespective of the asset's actual tax attributes?

Answer: $1,644. As discussed in paragraph 6.116, the fair value of an intangible asset would include the tax benefits resulting from the amortization of that intangible asset for income tax reporting purposes. In addition, as discussed in paragraph 6.118, the tax benefits associated with the amortization of that intangible asset would be included in the fair value of the intangible asset without regard to whether the transaction was structured as a taxable (that is, change in tax bases of assets acquired) or nontaxable business combination (that is, no change in tax bases of assets acquired). This is because the exit value to a market participant buyer of the asset would include consideration of the tax deductibility of the asset.

6.124 *TAB effect on WARA in an asset vs. stock deal*. When calculating the WARA when the TAB is not reflected in the overall PFI (for example, a nontaxable transaction), an adjustment should be incorporated into the total consideration used in the WARA calculation in order to properly reconcile asset values, including the inherent TAB, to the total consideration that is otherwise based on overall cash flows that do not reflect a TAB. If this adjustment is not applied, the potential exists to understate the implied *economic goodwill* and, therefore, distort the stratification of the discount rates and reconciliation of the WARA to the WACC and IRR.

6.125 *Example of total consideration adjustment*. This example assumes a total consideration of $710 million and $620 million for a hypothetical asset deal and stock deal, respectively. Further assume the calculated value of the assets, including their respective TAB values, is $600 million. In the hypothetical asset deal, the implied economic goodwill (residual approach) is $110 million. When measuring the fair value of intangible assets, common practice is to include, as part of the intangible asset's fair value, a TAB value for both taxable and nontaxable transactions. However, the TAB value is generally realizable only in taxable transactions. Following this practice, in a stock deal in which the TAB value is included in the value of the acquired assets ($600 million) but not reflected in the PFI that supports the total consideration of $620 million, the accounting goodwill is only $20 million prior to the calculation of any deferred tax liability or other purchase price adjustments. In the stock deal, there is an implicit mismatch of cash flows (specifically with regard to the effect of taxes) between the PFI supporting the total consideration of $620 million and the PFI supporting the value of the acquired assets of $600 million. Because the PFI supporting the total consideration of $620 million excludes the incremental cash flows associated with the tax savings that a buyer would realize under an asset deal (essentially, the

economic underpinning of the TAB value calculation), an adjustment of $90 million should be considered to the total consideration for use in the WARA calculation to arrive at the true economic goodwill of $110 million associated with the stock deal as adjusted. Without this adjustment to the total consideration, as shown in Table 6-4, the required rate of return on the residual goodwill may be distorted due to its proportionate undervaluation. Furthermore, this same adjustment can be applied in the calculation of the IRR (together with the inclusion of the incremental cash flows associated with the tax savings in the PFI), which can then be used as a diagnostic, for comparison purposes, to both the WACC and the WARA.

Table 6-4

	Asset deal (taxable)	Stock deal (nontaxable)
Deal consideration	$710	$620
Asset fair value (including TAB)	600	600
Residual goodwill	110	20
Present value of TAB	(included)	90
Adjusted deal consideration	710 (unchanged)	710
Adjusted residual goodwill	110 (unchanged)	110

Step 4: In the case of a transaction, evaluate the overall reasonableness of the asset's fair value relative to the other assets acquired and the overall purchase price. In other circumstances, compare the fair value of individual IPR&D assets to the overall fair value of the entity and to the fair value of the other assets owned by the entity

6.126 The task force believes that the valuation specialist should compare the individual asset valuations to the overall entity valuation (including the value of contingent consideration, if applicable) to ensure that assumptions are consistent or can be reconciled. It is important to solicit feedback from management and its advisers to establish that the valuation analysis is reasonable and consistent with the facts and circumstances as of the valuation date. To the extent that differences of opinion exist, they would need to be reconciled and documented in an objective and supportable fashion.

Additional Considerations for the Multiperiod Excess Earnings Method

6.127 Circumstances have arisen in which multiple assets of equal importance to the business, such as IPR&D assets and customer relationships, have overlapping revenues, and one of the assets does not readily lend itself to valuation by another technique. In such situations, some practitioners have chosen to value such assets simultaneously using the multiperiod excess earnings method with the use of circular cross charges as an attempt to adjust for overlapping revenues and cash flows. The task force believes that the simultaneous use of two or more multiperiod excess earnings method models to value two or more intangible assets that, in combination, generate one cash flow stream does not represent best practice and should be

avoided.

6.128 One method to remedy overlapping revenue and cash flows from two or more assets comprising a collection of assets would be to apportion (or "split") the PFI related to the assets so that each asset in the collection will have distinct PFI. Once the PFI has been apportioned to the distinct assets, contributory asset charges are not required because each asset will have its own PFI. Note that if the PFI is split between only two intangible assets, the multiperiod excess earnings model for each of these two assets will require charges for the contribution of other supporting assets, but not a cross-charge for the contribution of each to the other. Note that this "revenue, cash flow, or profit split" method is best when an apportionment can be made in an objective and supportable manner. Further, comparing the asset revenues to the business enterprise revenues is a necessary element of the process to demonstrate that double counting has not occurred.

6.129 Another alternative method to remedy overlapping revenue and cash flows is to value one subject intangible asset using the multiperiod excess earnings method and the others using an alternative method (for example, relief from royalty, cost approach, Greenfield method). In this case, the asset valued using the multiperiod excess earnings method would be charged for the other assets to the extent that the other assets are contributory or to the extent that the other asset values are derived from overlapping revenues and cash flows.

6.130 The task force notes that it will be important for management and the valuation specialist to take into consideration the qualitative factors of each intangible asset that affect the overall profitability of a business, when applying either the revenue, cash flow, or profit split method to apportion the PFI among the subject intangible assets or the application of independent valuation techniques to value the subject intangible assets.

Illustrative Example: Multiperiod Excess Earnings Method

6.131 Table 6-5 provides an example of the application of the multiperiod excess earnings method. In this example, the IPR&D asset being valued is entering phase II clinical trials. The valuation specialist has identified four potential scenarios for the success of the asset through clinical trials and commercialization, ranging from failure of phase II trials through a highly successful commercial launch. Each scenario includes corresponding prospective revenues and expenses, as well as an assessment of the probability of occurrence. For example, the scenario in which phase II, but not phase III trials, are successful shows significant expenses during the trial periods but no revenue thereafter. This scenario is assigned a probability of 20 percent. The probability-weighted pretax profit from these various scenarios is tax-effected, and contributory asset charges are applied for the use of net working capital, fixed assets, and the assembled workforce to arrive at the cash flows attributable specifically to the subject asset.

6.132 Because the cash flows within this analysis are expected, rather than conditional, in nature, an expected rate of return is used to discount those cash flows to present value. A TAB appropriate for the specific jurisdiction in which the asset is held is then added to arrive at the concluded value. It should be noted that in order to simplify this example, a single rate of return has been applied to discount the prerevenue cash outflows, which are at the discretion of

management, as well as the future cash inflows, which are expected to result from operations during the subsequent revenue-generating periods. In reality, the risk profile of the prerevenue versus postrevenue expected cash flows can vary significantly, and the valuation specialist may want to consider developing a separate risk-adjusted rate to discount the prerevenue cash outflows.

Table 6-5

Year		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
		Phase II	Phase III	Commercial Launch							Patent Expiration
Revenue Scenarios											
Failed Phase II trials		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Successful Phase II but failed Phase III		-	-	-	-	-	-	-	-	-	-
Successful commercial launch		-	-	50.0	65.0	75.0	70.0	60.0	40.0	20.0	5.0
Highly successful commercial launch		-	-	100.0	120.0	150.0	150.0	110.0	70.0	30.0	10.0
Operating Expense Scenarios											
Failed Phase II trials		7.0	-	-	-	-	-	-	-	-	-
Successful Phase II but failed Phase III		7.0	15.0	-	-	-	-	-	-	-	-
Successful commercial launch		7.0	15.0	42.0	51.0	49.0	46.0	40.0	29.0	15.0	4.0
Highly successful commercial launch		7.0	15.0	80.0	90.0	93.0	91.0	70.0	48.0	20.0	7.0
Pretax Income Scenarios											
Failed Phase II trials		(7.0)	-	-	-	-	-	-	-	-	-
Successful Phase II but failed Phase III		(7.0)	(15.0)	-	-	-	-	-	-	-	-
Successful commercial launch		(7.0)	(15.0)	8.0	14.0	26.0	24.0	20.0	11.0	5.0	1.0
Highly successful commercial launch		(7.0)	(15.0)	20.0	30.0	57.0	59.0	40.0	22.0	10.0	3.0
Probability-Weighted Pretax Income	***Probabilities***										
Failed Phase II trials	*35.0%*	(2.5)	-	-	-	-	-	-	-	-	-
Successful Phase II but failed Phase III	*20.0%*	(1.4)	(3.0)	-	-	-	-	-	-	-	-
Successful commercial launch	*30.0%*	(2.1)	(4.5)	2.4	4.2	7.8	7.2	6.0	3.3	1.5	0.3
Highly successful commercial launch	*15.0%*	(1.1)	(2.3)	3.0	4.5	8.6	8.8	6.0	3.3	1.5	0.5
Expected Pretax income	**100.0%**	**(7.0)**	**(9.8)**	**5.4**	**8.7**	**16.4**	**16.1**	**12.0**	**6.6**	**3.0**	**0.8**
	Tax Rate										
Less: Taxes	40.0%	(2.8)	(3.9)	2.2	3.5	6.5	6.4	4.8	2.6	1.2	0.3
After-tax income		**(4.2)**	**(5.9)**	**3.2**	**5.2**	**9.8**	**9.6**	**7.2**	**4.0**	**1.8**	**0.5**
Contributory Asset Charges											
Net working capital		0.3	0.4	0.5	0.6	0.8	0.7	0.6	0.4	0.2	0.1
Fixed assets		0.4	0.5	0.6	0.8	0.9	0.9	0.7	0.5	0.2	0.1
Assembled workforce		0.2	0.3	0.4	0.5	0.6	0.6	0.5	0.3	0.1	0.0
Total contributory asset charge		**0.9**	**1.2**	**1.5**	**1.9**	**2.3**	**2.2**	**1.7**	**1.1**	**0.5**	**0.2**
Cash flow attributable to IPR&D		**(5.1)**	**(7.1)**	**1.7**	**3.3**	**7.6**	**7.5**	**5.5**	**2.8**	**1.3**	**0.3**
	Discount Rate										
Discount factor	13.0%	0.941	0.832	0.737	0.652	0.577	0.511	0.452	0.400	0.354	0.313
Present value		**(4.8)**	**(5.9)**	**1.3**	**2.2**	**4.4**	**3.8**	**2.5**	**1.1**	**0.5**	**0.1**
Present value of cash flows		5.1									
Plus: Tax amortization benefit		1.1									
Fair value		**$ 6.3**									

Application of Relief From Royalty to IPR&D Assets

Overview

6.133 As discussed in chapter 1, the relief from royalty method under the income approach is relatively specialized for use in measuring the fair value of those intangible assets that are often the subject of licensing, such as trade names, patents, and proprietary technologies.

6.134 The fundamental concept underlying this method is that ownership of the subject asset relieves the owner from the need to pay royalties for use of the asset to a hypothetical third-party owner. The fair value of the asset is the present value of the license fees avoided by owning the subject asset (that is, the royalty savings).

6.135 Application of the relief from royalty method generally involves the following steps:

- Step 1: Isolate the prospective revenue stream related to the subject asset.
- Step 2: Determine the appropriate hypothetical royalty rate for use of the subject asset.
- Step 3: Calculate the present value of the after-tax cash flows using a discount rate appropriate for the specific asset being valued.
- Step 4: Compute the related income tax benefits resulting from the amortization of the IPR&D asset for income tax purposes.
- Step 5: In the case of a transaction, evaluate the overall reasonableness of the IPR&D asset's fair value relative to the other assets acquired and the overall purchase price.

Step 1: Isolate the prospective revenue stream related to the subject asset

6.136 The starting point for application of the relief from royalty method is to identify the revenue stream expected to be derived from use of the asset being valued. The hypothetical royalty rate will be applied to this revenue stream.

6.137 The valuation specialist would need to consider all issues noted in the "Use of Prospective Financial Information" section (including consistency with market participant assumptions, apportionment of revenue to various assets, technology migration, and so forth) in identifying the appropriate market participant level of expected revenues.

Step 2: Determine the appropriate hypothetical royalty rate for use of the subject asset

6.138 To appropriately apply the relief from royalty method for valuing an IPR&D asset, it is critical to develop a hypothetical royalty rate that reflects the comprehensive rights of use by virtue of the ownership of the asset. As with the valuation of any other asset or liability, development of inputs for this method using observed market data, such as observed royalty rates in actual arm's length negotiated licenses, is preferable to more subjective unobservable inputs.

6.139 Because most IPR&D assets have unique characteristics, the royalty rate selection process requires judgment. In certain instances, the underlying technology is often licensed or sublicensed to other third parties. The actual royalty rate charged by the company for use of the technology to other parties may be a reasonable proxy for the appropriate royalty rate to use within the valuation. However, in the absence of actual royalty rate transactions, market-based royalty rates for similar products are often used. Market royalty rates can be obtained from numerous third-party data vendors and publications.[15]

6.140 Based on the level of comparability, actual licensing fees or comparable market rates are adjusted to reflect the subject IPR&D asset being measured at fair value. Examples of such adjustments may include consideration to the usage of the subject asset in accordance with the expectations of market participants. For example, market royalty rates may reflect only limited usage of comparable assets, such as instances in which use is restricted to specific geographic locations, applications, or time periods. Other factors that may exist would also need to be considered. A market participant's use of the asset may differ from this type of limited use, thereby warranting an adjustment to the royalty rate.

6.141 The valuation specialist would also evaluate whether the observed rate reflects the all-inclusive rate commensurate to the complete set of rights associated with the subject asset. Frequently, a licensor may split the benefits associated with an asset with a licensee for a number of reasons. Truly comparable rates may be difficult to find for most technologies and, therefore, simulated or adjusted royalty rates taking into consideration qualitative value drivers of the subject intangible asset would be used.

Step 3: Calculate the present value of the after-tax cash flows using a discount rate appropriate for the specific asset being valued

6.142 As with the multiperiod excess earnings method, the valuation specialist would select a discount rate for the avoided royalty payments, which is consistent with the risk inherent in those payments.

6.143 In selecting the appropriate discount rate, it is important to consider all issues discussed in paragraphs 6.94–6.115 related to the discount rate selection within the multiperiod excess earnings method.

Step 4: Compute the related income tax benefits resulting from the amortization of the IPR&D asset for income tax purposes

6.144 As noted previously with regard to the multiperiod excess earnings method, the value of an asset valued using the relief from royalty method should incorporate the tax benefits resulting from the amortization of the intangible asset for income tax purposes. See paragraphs 6.116–6.125 for a discussion of tax amortization benefits within the multiperiod excess earnings

[15] As of the date of publication of this guide, third-party data vendors and publications included, but were not limited to, LexisNexis, RoyaltySource Online, ktMINE, and Licensing Economic Review.

method.

Step 5: In the case of a transaction, evaluate the overall reasonableness of the IPR&D asset's fair value relative to the other assets acquired and the overall purchase price

6.145 As discussed in paragraph 6.126, the valuation specialist should compare the individual IPR&D asset valuation to the value of the other assets acquired and to the overall entity valuation of the acquired company (including the value of contingent consideration, if applicable) to ensure that assumptions are consistent or can be reconciled.

Illustrative Example: Relief From Royalty Method

6.146 Table 6-6 provides an example of the application of the relief from royalty method. The following were key inputs and assumptions used in the application of this method:

- Prospective revenue for the specific IPR&D project
- The proportion of revenue attributable to the subject asset in each year
- A pretax royalty rate based on an analysis of licensing agreements for comparable assets
- An effective tax rate for the royalty payments
- A discount rate commensurate with the specific risk of the subject asset's cash flows

Table 6-6

Year		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Overall revenue		$ 100.0	$ 105.0	$ 110.3	$ 115.8	$ 120.4	$ 125.2	$ 130.2	$ 134.1	$ 138.1	$ 142.3
Growth			5.0%	5.0%	5.0%	4.0%	4.0%	4.0%	3.0%	3.0%	3.0%
Percentage of revenue attributable to IPR&D		100.0%	90.0%	80.0%	70.0%	60.0%	50.0%	40.0%	30.0%	20.0%	10.0%
Revenue attributable to IPR&D		100.0	94.5	88.2	81.0	72.2	62.6	52.1	40.2	27.6	14.2
Royalites avoided	Royalty Rate [1] 10.0%	10.0	9.5	8.8	8.1	7.2	6.3	5.2	4.0	2.8	1.4
Less: Taxes	Tax Rate 40.0%	(4.0)	(3.8)	(3.5)	(3.2)	(2.9)	(2.5)	(2.1)	(1.6)	(1.1)	(0.6)
After-tax royalties avoided		**6.0**	**5.7**	**5.3**	**4.9**	**4.3**	**3.8**	**3.1**	**2.4**	**1.7**	**0.9**
Discount factor	Discount Rate 13.0%	0.941	0.832	0.737	0.652	0.577	0.511	0.452	0.400	0.354	0.313
Present value		**5.6**	**4.7**	**3.9**	**3.2**	**2.5**	**1.9**	**1.4**	**1.0**	**0.6**	**0.3**
Present value of cash flows		25.1									
Plus: Tax amortization benefit		5.6									
Fair value		**$ 30.7**									

[1]The royalty rate in this example is predicated on all expenses being at the licensee level. Thus, it represents a net royalty. Depending on the source of royalty rate data, certain expenses may be recognized at the licensor level and would need to be reflected in the relief from royalty calculation.

Additional Considerations for Relief From Royalty Method

6.147 In certain circumstances, if there are insufficient observable royalty transactions for comparable assets, the task force believes that the relief from royalty method may not be appropriate to value IPR&D assets. The approach may be suitable, however, as a means of measuring the value of contributory assets required to generate the expected cash flows from IPR&D projects (for example, royalties paid for the use of trademarks, developed product technology, enabling technology, subject to the points discussed in paragraph 1.20). See paragraphs 6.77–6.93 for guidance on contributory asset charges.

Application of Decision Tree Analysis to IPR&D Assets

Overview

6.148 As noted in chapter 1, a decision tree analysis is an enhanced income-based method[16] that explicitly captures the expected benefits, costs, and probabilities of contingent outcomes at future decision points, or nodes. In general, these nodes are points at which a major investment decision will be made, such as whether to embark on a phase III clinical trial. At that point, management can decide whether to make an additional investment based on the benefits and costs expected from that point forward. If the expected present value of the asset at that time is less than the required investment, then the investment is avoided. This is the key difference between decision tree analysis and the previously discussed methods—the ability to analyze future values, change course, and potentially avoid future investment costs that are not expected to produce an adequate return. Decision tree analysis is particularly applicable to the valuation of assets subject to "private" (nonmarket) risks, such as the risk that a particular technology will succeed or fail. Risks that are correlated with external markets would need to be estimated discretely when a decision tree analysis is employed. In summary, the decision tree analysis provides the valuation specialist an ability to analyze cost at various stages, technological feasibility, and the value resulting from a successful outcome.

Pharmaceutical IPR&D Valuation Example: Decision Tree Analysis

6.149 Pharma Inc. acquired ABC Company, a developer, manufacturer, and marketer of pharmaceutical products. One of the assets acquired in the business combination was an in-process project involving a compound that has possible application in the treatment of certain cancers. At the acquisition date, the compound was entering phase II clinical testing in preparation for possible approval by the FDA. Two possible indications (tumor types) for the compound, that is, colorectal and prostate, were under development. The probabilities of success at each phase based on historical experience are provided in the following table. The probability

[16] In the case of IPR&D valuation, a decision tree analysis most commonly represents an enhancement to the multiperiod excess earnings method.

of success for each indication is independent of the probability of success for the other, and neither indication has an alternative future use.

Development Phase	*Probability of Advancing*
Phase II	15%
Phase III	75%

Based on these indicators, the probabilities of reaching a commercial launch for each indication is 11.25 percent (15% x 75% = 11.25%).

6.150 The after-tax development costs for each indication are $5 million for phase II and $50 million for phase III. It is estimated that it will take one year to complete each phase, with all costs assumed to occur at the beginning of the period. The estimated net cash flows following a commercial launch for the two indications (assuming an eight-year commercial life) are summarized in table 6-7. All amounts are in millions of dollars after income taxes. The computation of the net present value (NPV) of those net cash flows is discounted using the risk-free rates of return applicable to the period (for simplicity, this has been assumed to be a single rate of 6 percent throughout the yield curve). [17] The NPV amounts are computed to the start date of the remaining development effort. For each indication, the probability of a high market potential is 30 percent, and a low market potential is 70 percent. The estimates for the probability of success were based on historical experience with similar compounds.

Table 6-7

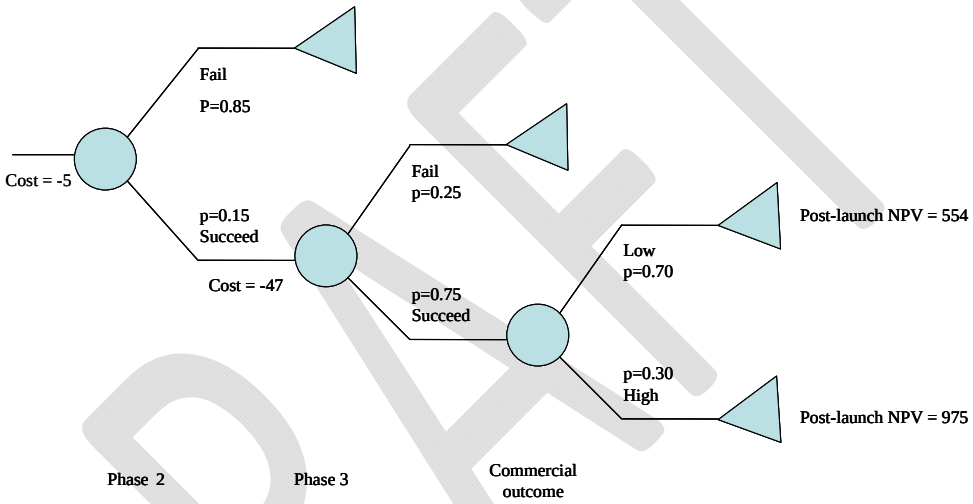
	Postlaunch Year								
	1	2	3	4	5	6	7	8	NPV
Colorectal									
High	-61	43	121	196	280	306	330	342	975
Low	-50	34	80	100	161	180	190	190	554

[17] The use of the risk-free rates in this example is not intended to imply that the price for bearing uncertainty is captured solely in the expected cash flows. According to FASB ASC 820-10-55-6, a discount rate that is commensurate with the risk inherent in the expected cash flows should be used when estimating fair value.

Prostate									
High	-68	47	135	217	311	339	366	379	1082
Low	-56	39	90	105	166	190	205	210	593

6.151 The following tree diagram shows the present value of the net cash flows and related probabilities for the colorectal indication:

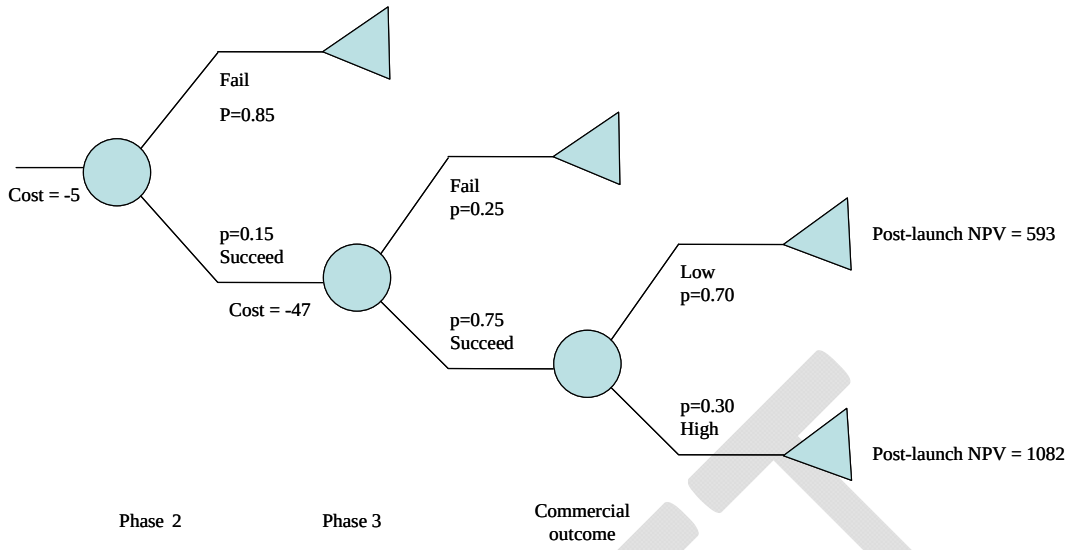
Colorectal Tree



The probability-weighted present value of net cash flows for the colorectal indication equals $64.5 million.

6.152 The following tree diagram shows the present value of the net cash flows and related probabilities for the prostate indication:

Prostate Tree



The probability-weighted present value of net cash flows for the prostate indication equals $71.2 million.

6.153 Because the probabilities and values associated with the two indications are independent of one another, the expected present value for the compound is the sum of the expected present value for each indication, or $135.7 million.

6.154 It is important to note that the preceding expected present values represent the incremental additional value of these growth opportunities to the market participant acquirer. In other words, these values include not just the value of the IPR&D asset itself, but the contribution to the asset's value from the acquirer's existing customer relationships, trademarks, workforce, working capital, and so forth. The use of the preceding unadjusted values may, therefore, overstate the value of the IPR&D asset. In addition, all of the preceding calculations employed a simplified end-of-period discounting assumption for postlaunch cash flows. It is more reasonable to assume that such cash flows would be received ratably throughout each postlaunch period. A methodology for making these required adjustments to the colorectal indication is presented in the following paragraphs.

6.155 To isolate the IPR&D asset's value from that of the overall project, the first step is to develop an expanded analysis of each commercial outcome, beginning with the low (70 percent probability) case:

Table 6-8

	1	2	3	4	5	6	7	8	9	10
Revenues			50	200	300	325	400	400	400	400
Expenses			41.5	126	159	162.5	128	116	100	100
Pretax			8.5	74	141	162.5	272	284	300	300
Tax			3	30	56	65	109	114	120	120
Net income			5	44	85	98	163	170	180	180
Adjustments:										
Depreciation			30	40	40	40	40	40	40	40
Capital expenditures			-80	-35	-35	-35	-35	-30	-30	-30
Working capital			-5	-15	-10	-3	-8	0	0	0
Net cash flow			-50	34	80	100	161	180	190	190
Discount rate			0.8644	0.8155	0.7693	0.7258	0.6847	0.6460	0.6094	0.5749
570			-43	28	61	73	110	117	116	109

6.156 It should be noted that in preceding table 6-8 and tables 6-9 through 6-11 that follow, all net cash flows are discounted at the 6 percent rate assumed in paragraph 6.150 using the mid-year discounting convention. For example, the discount factor as of the end of year 3 is $(1/1.06^{2.5})$, or 0.8644. As a consequence of this shift to a mid-year convention, the value of this scenario increases from $554 million to $570 million. At the end of year 10, the product is expected to reach the end of its economic life. This may be due to expiry of a patent, expected introduction of competing products, or other factors. For simplicity purposes, the liquidation value of tangible assets and working capital is assumed to be de minimus at the end of this period.

6.157 The low case is then reevaluated using the multiperiod excess earnings method to isolate the IPR&D asset value from the value of other contributory assets, as follows:

Table 6-9

	1	2	3	4	5	6	7	8	9	10
Revenues			50	200	300	325	400	400	400	400
Expenses			41.5	126	159	162.5	128	116	100	100
Pretax			8.5	74	141	162.5	272	284	300	300
Tax			3	30	56	65	109	114	120	120
Net income			5	44	85	98	163	170	180	180
Adjustments:										
Contributory asset charges			-3	-10	-15	-16	-20	-20	-20	-20
Net cash flow			3	34	70	81	143	150	160	160
Discount rate			0.8644	0.8155	0.7693	0.7258	0.6847	0.6460	0.6094	0.5749
528			2	28	54	59	98	97	98	92

6.158 A similar process is also applied to the high (30 percent probability) case:

Table 6-10

	1	2	3	4	5	6	7	8	9	10
Revenues			100	200	350	500	650	650	650	650
Expenses			69	128	140	165	175.5	156	117	97.5
Pretax			31	72	210	335	474.5	494	533	552.5
Tax			12	29	84	134	190	198	213	221
Net income			19	43	126	201	285	296	320	332
Adjustments:										
Depreciation			30	50	50	50	50	50	50	50
Capital expenditures			-100	-40	-40	-40	-40	-40	-40	-40
Working capital			-10	-10	-15	-15	-15	0	0	0
Net cash flow			-61	43	121	196	280	306	330	342
Discount rate			0.8644	0.8155	0.7693	0.7258	0.6847	0.6460	0.6094	0.5749
1,004			-53	35	93	142	192	198	201	196

6.159 Again, applying the multiperiod excess earnings method, the IPR&D asset value is isolated, as follows:

Table 6-11

	1	2	3	4	5	6	7	8	9	10
Revenues			100	200	350	500	650	650	650	650
Expenses			69	128	140	165	175.5	156	117	97.5
Pretax			31	72	210	335	474.5	494	533	552.5
Tax			12	29	84	134	190	198	213	221
Net income			19	43	126	201	285	296	320	332
Adjustments:										
Contributory asset charges			-5	-10	-18	-25	-33	-33	-33	-33
Net cash flow			14	33	109	176	252	264	287	299
Discount rate			0.8644	0.8155	0.7693	0.7258	0.6847	0.6460	0.6094	0.5749
940			12	27	83	128	173	170	175	172

6.160 The IPR&D asset value of the two commercial outcomes has now been estimated. These results are summarized in table 6-12 that follows:

Table 6-12

	Low	**High**	**Total**
Value of opportunity	570	1,004	
Probability of outcome	.70	.30	
	399	**301**	**700**
Probability of success			.1125
			78.8
Cost of opportunity:			
Phase III (present value of 50 at 6%)	47		
Probability	.15		-7.1
Phase II			-5.0
Net present value of opportunity			66.7
Value of IPR&D asset	528	940	
Probability of outcome	.70	.30	
	370	**282**	**652**
Probability of success			.1125
			73.4
Cost of IPR&D asset:			
Phase III (present value of 50 at 6%)	47		
Probability	.15		-7.1
Phase II			-5.0

Net present value before TAB	61.3
Tax amortization benefit (35% tax rate over 15 years)	18.7
Fair value, IPR&D asset	80.0

6.161 It should be noted that the present value of the overall opportunity is $66.7 million. However, the value of the IPR&D asset, stripped of the impact of contributory assets, is adjusted to $61.3 million. To arrive at fair value, the TAB is then added to this adjusted value to arrive at the final estimate of fair value, $80.0 million.

6.162 The preceding example is simplified in a number of ways:

- Both low and high outcomes are "in-the-money;" additional scenarios could be added that may imply it would be optimal to abandon R&D efforts associated with the project and avoid the costs of phase II or phase III, or both.

- The decisions themselves assume either success or failure, as determined at each decision point; more realistic scenarios might include partial failures, for example, phase II was not successful based on original time and cost estimates, but may be successful if additional efforts are made.

- Precommercialization contributory assets and charges are assumed to be "purchased" by the IPR&D project: $5 to pay for phase II and $50 for phase III. Thus, they are implicitly accounted for in the cost estimates for each phase. Any contributory assets that are already embedded in the project are assumed to be immaterial in this example.

All of the preceding simplifications can be modeled in greater detail, but the basic concepts presented herein would not change.

Summary of Decision Tree Method

6.163 As discussed in chapter 1, the decision tree method is most applicable when the asset to be valued is subject to multiple risks and contingent outcomes. In the previous pharmaceutical case, the acquirer faces two types of risks:

- The market risks associated with achieving unit prices, sales volumes, operating margins, and so forth
- The technological (contingent) risks of achieving success in phases II and III.

6.164 When commonly used methods are employed in the valuation of IPR&D assets such as these, both the market and technology risks are often captured in a single, combined risk-adjusted discount rate. Alternatively, these risks can be segregated and evaluated separately, as illustrated previously.

Other Methods

6.165 Chapter 1 of this guide discusses three valuation approaches (cost, market, and income) and various valuation methods under the income approach. However, this chapter demonstrates only three methods under the income approach (the multiperiod excess earnings method, the relief from royalty method, and decision tree analysis), which have been most commonly used in practice as of the writing of this guide. By not demonstrating the cost and market approaches or additional methods under the income approach, this guide is not intended to imply that these approaches and methods are not acceptable. The task force decided not to demonstrate the other approaches and methods due to their less common usage as of the writing of this guide.

6.166 The cost approach is rarely used in practice to value IPR&D assets because generally, there is little or no relationship between cost and fair value. The market approach is used infrequently to value IPR&D assets due to lack of observable data. Furthermore, some of the more advanced methods under the income approach (such as the real options method or Monte Carlo simulation) are not demonstrated because their use has not become common as of the writing of this guide. However, these advanced methods may be increasingly used in the future, and this guide does not intend to foreclose their use.

Valuation Report Considerations

6.167 A valuation specialist will typically document the valuation conclusions in a written report. A written report serves as important documentation in memorializing the characteristics of the assets valued, including IPR&D assets, the methodologies and assumptions used in the valuation of the assets, and the conclusions of value. Most valuation specialists belong to professional organizations, such as the AICPA, which have published standards as well as report requirements related to performing a valuation engagement.

6.168 The AICPA's Statement on Standards for Valuation Services (SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*),[18] provides guidance on the appropriate contents and other considerations associated with the preparation of the valuation report. Client personnel and non-CPA valuation specialists who do not work for a CPA firm are not subject to SSVS No. 1 requirements but may be subject to those of another professional organization.

6.169 Although a full discussion of the requirements of SSVS No. 1 is beyond the scope of this guide, the task force believes that there are certain items that are particularly important in documenting the valuation of IPR&D assets.

Identification and Description of IPR&D Assets

6.170 The task force recommends including the following items related to the identification of

[18] Other standards include those contained within the Uniform Standards of Professional Appraisal Practice as promulgated by the Appraisal Foundation, the Business Valuation Standards of the American Society of Appraisers, among others.

IPR&D assets in the valuation report:

- A description of the process used to identify IPR&D assets that meet the recognition criteria
- A discussion of the level of aggregation or disaggregation selected for subject assets, including assets to be used in R&D activities, given particular consideration to their highest and best use
- A description of how IPR&D assets are classified into appropriate subcomponents (for example, developed product technology and IPR&D projects)
- A discussion of how technology migration or existence of enabling technology (that meets the applicable recognition criteria), or both, have been addressed
- Discussion of how the relevant accounting guidance, such as that discussed in chapters 2, 3 and 4, has been considered

Valuation of IPR&D Assets

6.171 For IPR&D assets valued under the cost approach, the task force recommends including the following items in the valuation report:

- Sources of data (for example, acquiring company, acquired company, competitors)
- Nature of costs (reproduction versus replacement)
- Details of the method of cost aggregation (that is, actual application of the method or technique)
- Treatment of obsolescence
- Treatment of opportunity costs
- Treatment of taxes (if applicable)
- Treatment of TAB (if applicable)
- Rationale that led to selection of the cost approach

6.172 As discussed in chapter 1 of this guide, the cost approach is rarely used in the valuation of intangible IPR&D assets because generally there is little or no relationship between cost and fair value.

6.173 For IPR&D assets valued under the market approach, the task force recommends

including the following items in the valuation report:

- Sources of comparable data (acquiring company, acquired company, competitors, markets considered)
- Treatment of the adjustments to comparable data
- Details of the application of method or technique
- Treatment of discounts or adjustments to value indications
- Rationale that led to selection of the market approach

6.174 As discussed in chapter 1 of this guide, with the exception of certain assets within limited industries (for example, pharmaceuticals), the market approach is rarely used in the valuation of IRP&D assets because comparable data is rarely available.

6.175 For IPR&D assets valued under the income approach, the task force recommends including the following items in the valuation report:

- Sources of PFI applicable to IPR&D assets (acquiring company, acquired company, financial advisers, or competitors)
- Details of the procedures performed to allow the valuation specialist to rely on and use the PFI, including, for example:
  - Nature, timing, and estimated costs of the efforts necessary to complete the IPR&D project and the anticipated completion date
  - Risks and uncertainties associated with completing development on schedule and consequences if it is not completed on a timely basis
  - Product launch timing
  - Expected economic life of developed product
  - Anticipated changes in growth (that is, volumes and pricing) and margins over the relevant product life cycle
- Treatment of adjustments made to PFI to eliminate entity-specific assumptions
- Details of the procedures performed to reflect technology migration and, if necessary, the existence and separate valuation of enabling technology and other contributory assets

- If necessary, sources of royalty rates applied within the analysis
- Treatment of appropriate tax rates, discount rates, and, if necessary, contributory asset charges
- Details of the application of the valuation method or technique
- Derivation of discount rate
- Treatment of TAB
- Rationale that led to selection of the income approach

6.176 The use of alternative methods under the income approach, such as real options, decision tree analysis, Monte Carlo analysis, and so forth, would likely require a discussion of additional assumptions that are particular to those methods and not included in the preceding list.

6.177 Regardless of the valuation methods or techniques used to value the assets, the valuation specialist would need to document the selection of all key assumptions considered most likely to be made by market participants that are not unique to the reporting entity. Management would document the process used to determine the market participant assumptions and the reasons for any differences between the market participant assumptions and the reporting entity's assumptions used in the fair value measurements. In addition, the valuation specialist would need to document the types of data sources used for valuation inputs related to the fair value hierarchy (that is, observable versus unobservable inputs).

Reconciliation of Value Estimates

6.178 If a valuation specialist uses multiple valuation methods or techniques to value an IPR&D asset, then the task force believes that it would be necessary to provide a reconciliation of the various estimates of value, which would include a discussion of the relative merits of each valuation method or technique and the basis for any weightings applied in the conclusion of value.

Comprehensive Example

Overview

6.179 This section includes a comprehensive example of a valuation analysis used for measuring fair value of IPR&D assets. In this example, assume that Acquirer Company (Acquirer) acquired in a business combination Target Company (Target), a California-based software and professional services company. All potential intangible assets of Target related to the transaction (transaction) that may have existed at the date of valuation were initially considered in the valuation analysis. As a result of valuation specialists' review, the following intangible assets were ultimately valued in the analysis: (*a*) trade name, (*b*) patents, (*c*) customer relationships, (*d*) existing and developed technology; and (*e*) in-process technology.

6.180 The following general assumptions were made in connection with this valuation:

- Certain assumptions were discussed with Target's and Acquirer's management to determine their reasonableness for use in the analysis. PFI was also analyzed and discussed with Target's and Acquirer's management.
- The analysis utilizes market participant assumptions.
- Three approaches were considered in determining the fair value of the intangible assets: the income approach, the market approach, and the cost approach.
- The income approach was used to value the trade name, patents, customer relationships, existing and developed technology, and in-process technology.
- The estimated WACC for use in the analysis is 15 percent.

Trade Name

6.181 The trade name is associated with Target's entire business and, based on discussions with Target's management, it was indicated that the trade name was expected to be used for approximately 10 years following the date of the transaction. In estimating the value of the trade name, the income approach (through the relief from royalty method) was employed. The forecasted revenue base used in the valuation of the trade name was the revenue related to Target's overall business. Based on research of comparable third-party licensing transactions, a 1.0 percent royalty rate was utilized in the analysis. However, it was determined that a 1.0 percent royalty for the acquired trade name would only apply for the first 5 years after the transaction. Given the technology-related nature of the acquired trade name, it was estimated that the royalty rate would decline to 0.5 percent for the remaining 5 years of the trade name's life.

6.182 After calculating pretax income based on the previously noted royalty rates, a 40.0 percent tax rate was used to arrive at after-tax cash flow. After-tax cash flow was then discounted to present value utilizing a discount rate of 15 percent. The selected discount rate was based on the estimated risk associated with the trade name, which was assumed to be approximately equivalent with the overall business of Target. The present values of the after-tax cash flow and the amortization tax benefit were summed to arrive at the indicated value of Target's trade name. Refer to schedule 6-2, "Acquired Trade Name," for additional detail.

Patents

6.183 In estimating the value of Target's patents, the income approach (through the relief from royalty method) was employed. Based on the terms of the existing patents, it was indicated that the patents would be valid for seven years following the transaction. The forecasted revenue used in the valuation of the patents was the revenue related to the existing and developed technology and in-process technology. Research of comparable third-party licensing transactions for similar technologies was performed to conclude on a 3.0 percent royalty rate.

6.184 After calculating pretax income based on a royalty rate of 3.0 percent, a 40.0 percent tax rate was used to arrive at after-tax cash flow. After-tax cash flow was then discounted to present value utilizing a discount rate of 15 percent. The selected discount rate was based on the

estimated risk associated with the patents, which was assumed to be approximately equivalent with the overall business of Target. The present value of the after-tax cash flow and the amortization tax benefit were summed to arrive at the indicated value of Target's patents. Refer to schedule 6-3 for additional detail.

Customer Relationships

6.185 In estimating the value of the customer relationships, the income approach (through the with and without method) was employed. Based on discussions with Target's management, it was indicated that the existing customer relationships were valuable to Target's business. The forecasted revenue base used in the valuation of the customer relationships was assumed to be the total revenues for the Target.

6.186 Target's management indicated that rebuilding the customer base would require approximately two years of effort and would result in certain lost revenues during that time. Specifically, it was estimated that without the customers, Target would lose approximately 20 percent of its revenue in the first year and 5 percent of its revenue in the second year (while reestablishing its customer base). Cost of goods sold and other operating expenses were assumed to be variable in both scenarios. Utilizing a discount rate of 15 percent, the present values of the differences in debt-free cash flows between the two scenarios were added to the amortization tax benefit to arrive at an indicated value for the customer relationships. The selected discount rate was based on the assumed equivalent risk of the customer relationships, as compared to the overall business of Target. Refer to schedule 6-4, "Customer Relationships," for additional detail.

Existing and Developed Technology

6.187 In estimating the value of the existing and developed technology, the income approach (through the multiperiod excess earnings method[19]) was employed. The forecasted revenue and expense margins used in the valuation of the existing and developed technology were provided by management. After arriving at the estimated earnings before interest, taxes, depreciation, and amortization (EBITDA) level for the existing and developed technology, depreciation expense and pretax contributory asset charges for the trade name and patents (based on implicit royalty rates of 1 percent and 3 percent, respectively) were applied to arrive at earnings before interest and taxes (EBIT). Pretax cash flows were then tax-effected utilizing a 40.0 percent tax rate to calculate net income.

6.188 Depreciation was then added back because it represents a noncash expense. Additionally, the return of fixed assets and other after-tax contributory asset charges (for net working capital, return on fixed assets, assembled work force, and customer relationships) were deducted to arrive at after-tax cash flow. After-tax cash flow was then discounted to present value utilizing a

[19] The multiperiod excess earnings method was also used to value the in-process technology in this example. However, this example does not demonstrate the dual multiperiod excess earnings method. The revenue has been split first, and then the multiperiod excess earnings method has been applied to each of the streams of revenue separately.

discount rate of 15 percent. The selected discount rate was based on the estimated risk associated with the existing and developed technology, which was assumed to be approximately equivalent to the overall business of Target. Finally, the present value of the after-tax cash flows and the amortization tax benefit were summed to arrive at an indicated value for the existing and developed technology. Refer to schedule 6-5, "Existing and Developed Technology," for additional detail.

In-Process Technology

6.189 In estimating the value of the in-process technology, the income approach (through the multiperiod excess earnings method[20]) was employed. The forecasted revenue base, expense margins, and initial costs to complete used in the valuation of the in-process technology were provided by management. As of the date of valuation, it was estimated that the in-process technology required approximately $4.0 million in remaining costs before it was completed. After arriving at the estimated EBITDA level for the in-process technology, depreciation expense and pretax contributory asset charges for the trade name and patents (based on implicit royalty rates of 1 percent and 3 percent, respectively) were applied to arrive at EBIT. Note that during the first forecast year (*a*) the charge for the patent is assumed to represent a milestone payment; (*b*) a contributory asset charge was not applied for the trade name because the in-process technology is not expected to generate revenue until the second year; and (*c*) the charges for the patents and other contributory assets were approximated based on the remaining costs to complete the in-process technology. Pretax cash flows were then tax effected utilizing a 40.0 percent tax rate to calculate net income.

6.190 Depreciation was then added back because it represents a noncash expense. Additionally, the return of fixed assets and other after-tax contributory charges (for net working capital, return on fixed assets, assembled work force, and customer relationships) were deducted to arrive at after-tax cash flow. After-tax cash flow was then discounted to present value utilizing a discount rate of 19 percent. The selected discount rate was based on the higher estimated risk associated with the in-process technology, as compared to the overall business of Target. Also note that the selected discount rate represents a blended rate, combining the lower rate that would be applicable to the costs to complete and the higher rate related to the uncertain positive cash flows of the in-process technology. Finally, the present value of the after-tax cash flows and the amortization tax benefit were summed to arrive at an indicated value for the in-process technology. Refer to schedule 6-6, "In-Process Technology," for additional detail.

6.191 As discussed previously, the multiperiod excess earnings method is employed in this example to determine the value of the in-process technology. Although this method is frequently considered to be the preferred, "best practices" method for valuing such assets, other methods may also be acceptable in some circumstances, including decision tree analysis, the Greenfield method, and so forth. An example of an IPR&D asset valuation using a decision tree analysis is

[20] The multiperiod excess earnings method was also used to value the existing and developed technology in this example. However, this example does not demonstrate the dual multi-period excess earnings method. The revenue has been split first, and then the multiperiod excess earnings method has been applied to each of the streams of revenue separately.

included in the "Application of Decision Tree Analysis to IPR&D Assets" section of this chapter.

Additional Analysis

6.192 The following are additional observations in connection with this valuation:

- The assembled work force of Target was valued to calculate a contributory asset charge only. Refer to schedule 6-7, "Assembled Work Force," for additional detail.
- The calculated contributory asset charges are shown in schedule 6-8, "Contributory Charges." For further detail related to the calculation of contributory asset charges, refer to the Appraisal Foundation, Best Practices for Valuations in Financial Reporting: *The Identification of Contributory Assets and the Calculation of Economic Rents.*
- The detailed revenue assumptions related to Target's technology, as forecasted by Target's management, are included in schedule 6-9, "Revenue Detail."
- Based on the forecast provided by Target's management, an IRR was calculated using a business enterprise valuation approach. The estimated IRR of 15.0 percent is detailed in schedule 6-10, "Business Enterprise Valuation and Internal Rate of Return."
- Schedule 6-11, "Summary of Assets," represents a summary of the assets considered in this analysis.
- WARA and reconciliation between the WARA, WACC, and IRR are included in schedule 6-12, "Weighted Average Return on Assets."

Schedules

Overview of Assumptions and Inputs

Overall		(000's)									
		2X11	2X12	2X13	2X14	2X15	2X16	2X17	2X18	2X19	2X20
Total revenue		100,000	109,000	116,500	122,000	127,100	130,913	134,840	138,886	143,052	147,344
Revenue growth		--	9.0%	6.9%	4.7%	4.2%	3.0%	3.0%	3.0%	3.0%	3.0%
Margins											
Cost of goods sold		65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Operating expenses	15.0%	13.4%	13.3%	13.2%	13.0%	12.9%	13.9%	13.7%	13.6%	13.6%	13.5%
Research & development (R&D)		7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Maintenance R&D	25.0%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
Depreciation		1.6%	1.7%	1.8%	2.0%	2.1%	1.1%	1.3%	1.4%	1.4%	1.5%
Terminal year growth rate		3.0%									
Income tax rate		40.0%									
Working capital % of revenue		5.0%									
Amortization period		15.0									

Discount rates	
Trade Name	15.0%
Patents	15.0%
Customer relationships	15.0%
Developed technology	15.0%
In-process technology	19.0%
Workforce	15.0%
Goodwill	20.0%
WACC	15.0%

Trade name assumptions	2X11	2X12	2X13	2X14	2X15	2X16	2X17	2X18	2X19	2X20
Revenue related to trademark	100,000	109,000	116,500	122,000	127,100	130,913	134,840	138,886	143,052	147,344
Royalty rate	1.0%	1.0%	1.0%	1.0%	1.0%	0.5%	0.5%	0.5%	0.5%	0.5%

Patents assumptions	2X11	2X12	2X13	2X14	2X15	2X16	2X17	2X18
Revenue related to patents	60,000	67,400	73,200	77,100	81,000	59,290	26,280	0
Revenue growth	--	NMF [1]	8.6%	5.3%	5.1%	-26.8%	-55.7%	-100.0%
Royalty rate	3.0%							

Customers	2X11	2X12	2X13	2X14	2X15
Revenue w/o customers, as a % of revenue w/ customers	80.0%	95.0%	100.0%	100.0%	100.0%
Increase in expenses, as a % of revenue	1.0%	0.5%	0.0%	0.0%	0.0%

Existing and Developed Technology	2X11	2X12	2X13	2X14
Revenue related to technology	60,000	40,440	18,300	0
Cost of goods sold	67.0%	72.0%	72.0%	72.0%

In-Process Technology	2X11	2X12	2X13	2X14	2X15	2X16	2X17
Revenue related to technology	0	26,960	54,900	77,100	81,000	59,290	26,280
Cost of goods sold	NMF	68.0%	64.0%	62.0%	62.0%	65.0%	69.0%
Cost to complete	4,000						

Workforce

See schedule 6-7 for assumptions

[1] The abbreviation of "NMF" stands for "not meaningful."

Schedule 6-1
Target Company
Valuation Summary

Intangible Assets	Value
Trade name	3,800
Patents	6,300
Customer relationships	3,000
Existing/developed technology	6,100
In-process technology	12,600
Total Identifiable Intangible Assets	31,800

Schedule 6-2
Target Company
Acquired Trade Name

For the fiscal years ending		(000's)									
		2X11	2X12	2X13	2X14	2X15	2X16	2X17	2X18	2X19	2X20
Revenue		100,000	109,000	116,500	122,000	127,100	130,913	134,840	138,886	143,052	147,344
Royalty rate		1,000	1,090	1,165	1,220	1,271	655	674	694	715	737
Pretax income		1,000	1,090	1,165	1,220	1,271	655	674	694	715	737
Income tax expense	40.0%	400	436	466	488	508	262	270	278	286	295
After-tax cash flow		600	654	699	732	763	393	405	417	429	442
Discount period		0.50	1.50	2.50	3.50	4.50	5.50	6.50	7.50	8.50	9.50
Present value factor	15.0%	0.9327	0.8112	0.7054	0.6134	0.5334	0.4638	0.4033	0.3507	0.3050	0.2652
Present value of after-tax cash flow		558	531	493	449	407	182	163	146	131	117
Sum, present value of interim cash flows		3,177									
Tax amortization benefit		638									
Indication of value		3,815									
Indication of value (rounded)		3,800									

Selected Assumptions										
Life	10 years									
Royalty rate	1.0%	1.0%	1.0%	1.0%	1.0%	0.5%	0.5%	0.5%	0.5%	0.5%

Schedule 6-3

Target Company

Patents (shared by both developed technology and in-process research and development)

For the fiscal years ending		(000's)							
		2X11	2X12	2X13	2X14	2X15	2X16	2X17	2X18
Revenue		60,000	67,400	73,200	77,100	81,000	59,290	26,280	0
Royalty rate		1,800	2,022	2,196	2,313	2,430	1,779	788	0
Pretax income		1,800	2,022	2,196	2,313	2,430	1,779	788	0
Income tax expense	40.0%	720	809	878	925	972	711	315	0
After-tax cash flow		1,080	1,213	1,318	1,388	1,458	1,067	473	0
Discount period		0.50	1.50	2.50	3.50	4.50	5.50	6.50	7.50
Present value factor	15.0%	0.9327	0.8112	0.7054	0.6134	0.5334	0.4638	0.4033	0.3507
Present value of after-tax cash flow		1,005	984	929	851	778	495	191	0
Sum, present value of interim cash flows		5,233							
Tax amortization benefit		1,051							
Indication of value		6,283							
Indication of value (rounded)		6,300							
Selected Assumptions									
Royalty rate		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Schedule 6-4

Target Company

Customer Relationships

For the fiscal years ending		(000's)				
		2X11	2X12	2X13	2X14	2X15
Revenue						
With customers		100,000	109,000	116,500	122,000	127,100
Without customers		80,000	103,550	116,500	122,000	127,100
Difference in revenue		20,000	5,450	0	0	0
Cost of goods sold and operating/research and development expenses						
With customers		87,000	94,830	101,355	106,140	110,577
Without customers		70,400	90,606	101,355	106,140	110,577
Difference in operating expenses		16,600	4,224	0	0	0
Operating income						
With customers		13,000	14,170	15,145	15,860	16,523
Without customers		9,600	12,944	15,145	15,860	16,523
Difference in operating income		3,400	1,226	0	0	0
Income tax expense						
With customers		5,200	5,668	6,058	6,344	6,609
Without customers		3,840	5,178	6,058	6,344	6,609
Difference in income taxes	40%	1,360	491	0	0	0
Debt-free cash flow						
With customers		7,800	8,502	9,087	9,516	9,914
Without customers		5,760	7,766	9,087	9,516	9,914
Difference in debt-free net cash flow		2,040	736	0	0	0
Discount period		0.50	1.50	2.50	3.50	4.50
Present value factor	15.0%	0.9327	0.8112	0.7054	0.6134	0.5334
Present value of after tax cash flow		1,897	597	0	0	0
Sum, present value of interim cash flows		2,494				
Tax amortization benefit		501				
Indication of value		2,995				
Indication of value (rounded)		3,000				

Selected Assumptions						
Revenue differential (loss)		20,000	5,450	0	0	0
Expense differential (increase)		1.0%	0.5%	0.0%	0.0%	0.0%

Schedule 6-5

Target Company
Existing and Developed Technology

For the fiscal years ending		(000's)			
		2X11	2X12	2X13	2X14
Revenue		60,000	40,440	18,300	0
Cost of goods sold		40,200	29,117	13,176	0
Gross profit		19,800	11,323	5,124	0
Operating expenses		8,030	5,373	2,412	0
Research and development--maintenance		1,050	708	320	0
Total operating expenses		9,080	6,081	2,732	0
EBITDA [1]		10,720	5,242	2,392	0
Depreciation		970	693	333	0
Implicit royalty rate - Trade name		600	404	183	0
Implicit royalty rate - Patents		1,800	1,213	549	0
EBIT [2]		7,350	2,932	1,327	0
Income tax expense	40.0%	2,940	1,173	531	0
Net income (loss)		4,410	1,759	796	0
Add: Depreciation		970	693	333	0
Less: Return of fixed assets		970	693	333	0
Less: Other after-tax contributory charges		618	417	189	0
After tax cash flow		3,792	1,342	607	0
Discount period		0.50	1.50	2.50	3.50
Present value factor	15.0%	0.9327	0.8112	0.7054	0.6134
Present value of after tax cash flow		3,527	1,089	429	0
Sum, present value of interim cash flows		5,044			
Tax amortization benefit		1,013			
Indication of value		6,057			
Indication of value (rounded)		6,100			

Selected Assumptions					
Cost of goods sold		67.0%	72.0%	72.0%	72.0%
Gross margin		33.0%	28.0%	28.0%	28.0%
Operating expenses		13.4%	13.3%	13.2%	13.0%
Research and development--maintenance		1.8%	1.8%	1.8%	1.8%
EBITDA margin		17.9%	13.0%	13.1%	NMF [3]
Depreciation		1.6%	1.7%	1.8%	2.0%
Implicit royalty rate - Trade name		1.0%	1.0%	1.0%	1.0%
Implicit royalty rate - Patents		3.0%	3.0%	3.0%	3.0%
Charge for the use of contributory assets		1.0%	1.0%	1.0%	1.0%

[1] The abbreviation of "EBITDA" stands for "earnings before interest, taxes, depreciation and amortization."

[2] The abbreviation of "EBIT" stands for "earnings before interest and taxes."

[3] The abbreviation of "NMF" stands for "not meaningful."

Schedule 6-6

Target Company
In-Process Technology

For the fiscal years ending		(000's)						
		2X11	2X12	2X13	2X14	2X15	2X16	2X17
Revenue		0	26,960	54,900	77,100	81,000	59,290	26,280
Cost of goods sold		0	18,333	35,136	47,802	50,220	38,539	18,133
Gross profit		0	8,627	19,764	29,298	30,780	20,752	8,147
Operating expenses		0	3,582	7,235	10,057	10,452	8,232	3,598
Cost to complete		4,000	0	0	0	0	0	0
Research and development--maintenance		0	472	961	1,349	1,418	1,038	460
Total operating expenses		4,000	4,054	8,196	11,407	11,870	9,269	4,058
EBITDA [1]		(4,000)	4,573	11,568	17,891	18,910	11,482	4,089
Depreciation		317	462	1,000	1,508	1,698	662	344
Implicit royalty rate - Trade name		0	270	549	771	810	593	263
Implicit royalty rate - Patents		120	809	1,647	2,313	2,430	1,779	788
EBIT [2]		(4,437)	3,033	8,372	13,300	13,973	8,449	2,694
Income tax expense	40.0%	0	0	2,787	5,320	5,589	3,380	1,077
Net income (loss)		(4,437)	3,033	5,585	7,980	8,384	5,069	1,616
Add: Depreciation		317	462	1,000	1,508	1,698	662	344
Less: Return of fixed assets		317	462	1,000	1,508	1,698	662	344
Less: Other after-tax contributory charges		41	278	566	794	835	611	271
After-tax cash flow		(4,479)	2,755	5,019	7,185	7,549	4,458	1,345
Discount period		0.50	1.50	2.50	3.50	4.50	5.50	6.50
Present value factor	19.0%	0.9169	0.7707	0.6476	0.5442	0.4573	0.3843	0.3230
Present value of after-tax cash flow		(4,095)	2,123	3,251	3,911	3,452	1,713	435
Sum, present value of interim cash flows		10,790						
Tax amortization benefit		1,783						
Indication of value		12,574						
Indication of value (rounded)		12,600						

Selected Assumptions								
Cost of goods sold		NMF [3]	68.0%	64.0%	62.0%	62.0%	65.0%	69.0%
Gross margin		NMF	32.0%	36.0%	38.0%	38.0%	35.0%	31.0%
Operating expenses		13.4%	13.3%	13.2%	13.0%	12.9%	13.9%	13.7%
Research and development--maintenance		1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
Operating margin		NMF	17.0%	21.1%	23.2%	23.3%	19.4%	15.6%
Depreciation		1.6%	1.7%	1.8%	2.0%	2.1%	1.1%	1.3%
Implicit royalty rate - Trade name		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Implicit royalty rate - Patents		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Charge for the use of contributory assets		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

[1] The abbreviation of "EBITDA" stands for "earnings before interest, taxes, depreciation and amortization."

[2] The abbreviation of "EBIT" stands for "earnings before interest and taxes."

[3] The abbreviation of "NMF" stands for "not meaningful."

Schedule 6-7

Target Company
Assembled Work Force

		Salary Data			
Category	Number of Employees	Average Annual Salary (w/o burden)	Burden Rate (%)	Average Annual Salary (w/ burden)	Average Weekly Salary (w/ burden)
Engineering	35	65,000	25%	81,250	1,563
Sales	12	55,000	15%	63,250	1,216
Administrative	25	45,000	20%	54,000	1,038

	Training Cost Data				
Category	Weeks of Training	Percent of Time Spent Training	Training Cost	Explicit Training Cost	Total Training Cost
Engineering	4	100%	6,250	1,000	7,250
Sales	4	100%	4,865	750	5,615
Administrative	2	50%	1,038	0	1,038

	Pretax Cost per Employee					
Category	Search	Interview	Training	Total Acquisition Cost	Number of Employees	Total Pretax Cost
Engineering	3,000	1,500	7,250	11,750	35	411,250
Sales	2,500	1,500	5,615	9,615	12	115,385
Administrative	1,000	1,000	1,038	3,038	25	75,962
					Indication of value	602,596
					Indication of value (000's and rounded)	600

Schedule 6-8

Target Company
Contributory Charges

		(000's)						
Asset		2X11	2X12	2X13	2X14	2X15	2X16	2X17
Net working capital								
Charge (after-tax rate)	4.6%	232	253	270	283	295	304	313
as a percentage of total revenue		0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Normalized level		0.2%						
Fixed assets (return on only)								
Charge (after-tax rate)	5.8%	440	439	427	403	369	369	400
as a percentage of total revenue		0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%
Normalized level		0.3%						
Assembled work force								
Charge (after-tax rate)	15.0%	90	90	90	90	90	90	90
as a percentage of total revenue		0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Normalized level		0.1%						
Customer relationships								
Charge (after-tax rate)	15.0%	450	450	450	450	450	450	450
as a percentage of total revenue		0.5%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%
Normalized level		0.4%						
Aggregate after-tax charge for the use of contributory assets		**1.0%**						
Trade name								
Pretax contributory charge as a percentage of total revenue		1.0%						
Patents								
Pretax contributory charge as a percentage of total revenue		3.0%						

Schedule 6-9

Target Company
Revenue Detail

For the fiscal years ending	(000's)									
	2X11	2X12	2X13	2X14	2X15	2X16	2X17	2X18	2X19	2X20
Total revenue	100,000	109,000	116,500	122,000	127,100	130,913	134,840	138,886	143,052	147,344
Revenue attributable to										
Technology	60,000	67,400	73,200	77,100	81,000	84,700	87,600	90,200	92,900	95,700
Other revenue	40,000	41,600	43,300	44,900	46,100	46,213	47,240	48,686	50,152	51,644
Total	100,000	109,000	116,500	122,000	127,100	130,913	134,840	138,886	143,052	147,344
Revenue attributable to										
Technology, as a % of total revenue	60%	62%	63%	63%	64%	65%	65%	65%	65%	65%
Other, as a % of total revenue	40%	38%	37%	37%	36%	35%	35%	35%	35%	35%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Technology revenue										
Existing/developed	100%	60%	25%	0%	0%	0%	0%	0%	0%	0%
In-process	0%	40%	75%	100%	100%	70%	30%	0%	0%	0%
Future yet-to-be-defined	0%	0%	0%	0%	0%	30%	70%	100%	100%	100%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Technology revenue										
Existing/developed	60,000	40,440	18,300	0	0	0	0	0	0	0
In-process	0	26,960	54,900	77,100	81,000	59,290	26,280	0	0	0
Future yet-to-be-defined	0	0	0	0	0	25,410	61,320	90,200	92,900	95,700
Total	60,000	67,400	73,200	77,100	81,000	84,700	87,600	90,200	92,900	95,700

Schedule 6-10

Target Company

Business Enterprise Valuation and Internal Rate of Return

For the fiscal years ending		(000's)						
		2X11	2X12	2X13	2X14	2X15	2X16	2X17
Revenue		100,000	109,000	116,500	122,000	127,100	130,913	134,840
Cost of goods sold		65,000	70,850	75,725	79,300	82,615	85,093	87,646
Gross profit		35,000	38,150	40,775	42,700	44,485	45,820	47,194
Operating expenses		13,383	14,482	15,354	15,914	16,401	18,176	18,462
Research and development		7,000	7,630	8,155	8,540	8,897	9,164	9,439
Total operating expenses		20,383	22,112	23,509	24,454	25,298	27,340	27,901
EBITDA [1]		14,617	16,038	17,266	18,246	19,187	18,480	19,294
Depreciation		1,617	1,868	2,121	2,386	2,664	1,461	2,200
EBIT [2]		13,000	14,170	15,145	15,860	16,523	17,019	17,094
Other income/(expense)		0	0	0	0	0	0	0
EBT [3]		13,000	14,170	15,145	15,860	16,523	17,019	17,094
Income tax expense	40.0%	5,200	5,668	6,058	6,344	6,609	6,807	6,837
Debt-free net income		7,800	8,502	9,087	9,516	9,914	10,211	10,256
Add: Depreciation		1,617	1,868	2,121	2,386	2,664	1,461	2,200
Add/(Less): Changes in debt-free net working capital		(14)	(436)	(375)	(275)	(255)	(191)	(196)
Less: Capital expenditures		(1,700)	(1,750)	(1,800)	(1,900)	(2,000)	(2,100)	(2,200)
Debt-free cash flow		7,704	8,184	9,033	9,727	10,323	9,382	10,060
Discount period		0.50	1.50	2.50	3.50	4.50	5.50	6.50
Present value factor	15.0%	0.9328	0.8114	0.7057	0.6137	0.5338	0.4642	0.4038
Present value of after-tax cash flow		7,166	6,640	6,375	5,970	5,510	4,355	4,062
Terminal year growth rate and value	3.0%							86,491
Sum of present values		**$75,000**	**$75,000**	**Total purchase consideration**				
Selected Assumptions								
Revenue growth		--	8.7%	6.9%	4.7%	4.2%	3.0%	3.0%
Cost of goods sold		65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Gross profit		35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%
Operating expenses		13.4%	13.3%	13.2%	13.0%	12.9%	13.9%	13.7%
Research and development		7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
EBITDA		14.6%	14.7%	14.8%	15.0%	15.1%	14.1%	14.3%
Depreciation and amortization		1.6%	1.7%	1.8%	2.0%	2.1%	1.1%	1.6%
EBIT		13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	12.7%
Other income/(expense)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
EBT		13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	12.7%
Federal and state tax rate		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Net working capital as a % of revenue		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%

[1] The abbreviation of "EBITDA" stands for "earnings before interest, taxes, depreciation and amortization."

[2] The abbreviation of "EBIT" stands for "earnings before interest and taxes."

[3] The abbreviation of "EBT" stands for "earnings before taxes."

Schedule 6-11

Target Company
Summary of Assets

Identified Assets	Value	Percent of Total
Total current assets	10,000	12.5%
Property and equipment, net	7,500	9.4%
Other assets	0	0.0%
Subtotal, current and tangible assets	17,500	21.9%
Trade name	3,800	4.8%
Patents	6,300	7.9%
Customer relationships	3,000	3.8%
Existing/developed technology	6,100	7.6%
In-process technology	12,600	15.8%
Subtotal, technology	31,800	39.8%
Assembled work force	600	0.8%
Implied goodwill	30,100	37.6%
Total transaction value (detail below)	80,000	100.0%
Consideration paid	75,000	
Liabilities assumed	5,000	
Total	80,000	

Schedule 6-12

Target Company
Weighted Average Return on Assets

Assets	Value	After-tax Return	Weighted Return	
Net working capital	$5,000	4.6%	0.3%	
Property and equipment, net	7,500	5.8%	0.6%	
Other assets	0	5.8%	0.0%	
Trade name	3,800	15.0%	0.8%	
Patents	6,300	15.0%	1.3%	
Customer relationships	3,000	15.0%	0.6%	
Existing/developed technology	6,100	15.0%	1.2%	
In-process technology	12,600	19.0%	3.2%	
Assembled work force	600	15.0%	0.1%	
Implied goodwill	30,100	20.0%	8.0%	
Total	$75,000		16.1%	Weighted Average Return on Assets
			15.0%	Weighted Average Cost of Capital
			15.0%	Internal Rate of Return

Company A — Supporting Schedule

Target Company
Fixed Asset Additions and Depreciation

	2X11	2X12	2X13	2X14	2X15	2X16	2X17	2X18	2X19	2X20
Opening net fixed asset balance	$7,500	$7,583	$7,465	$7,143	$6,658	$5,993	$6,632	$7,068	$7,404	$7,750
Capital expenditures (additions)	1,700	1,750	1,800	1,900	2,000	2,100	2,200	2,300	2,400	2,500
Depreciation										
Opening balance	$1,496	$1,500	$1,500	$1,500	$1,500	$4	$0	$0	$0	$0
Additions, period 1	121	243	243	243	243	243	243	121	0	0
Additions, period 2		125	250	250	250	250	250	250	125	0
Additions, period 3			129	257	257	257	257	257	257	129
Additions, period 4				136	271	271	271	271	271	271
Additions, period 5					143	286	286	286	286	286
Additions, period 6						150	300	300	300	300
Additions, period 7							157	314	314	314
Additions, period 8								164	329	329
Additions, period 9									171	343
Additions, period 10										179
Subtotal	1,617	1,868	2,121	2,386	2,664	1,461	1,764	1,964	2,054	2,150
Ending net fixed asset balance	$7,583	$7,465	$7,143	$6,658	$5,993	$6,632	$7,068	$7,404	$7,750	$8,100
Average net fixed assets	$7,541	$7,524	$7,304	$6,901	$6,326	$6,313	$6,850	$7,236	$7,577	$7,925
Revenue	$100,000	$109,000	$116,500	$122,000	$127,100	$130,913	$134,840	$138,886	$143,052	$147,344
Average net fixed asset turnover [1]	13.3	14.5	15.9	17.7	20.1	20.7	19.7	19.2	18.9	18.6
Average remaining lives (net fixed assets)										
Opening balance	5 years									
New asset additions	7 years									
Depreciation, as a % of revenue	1.6%	1.7%	1.8%	2.0%	2.1%	1.1%	1.3%	1.4%	1.4%	1.5%

[1] Defined as total revenue divided by average net fixed assets.

Glossary

asset resulting from research and development (R&D) activities. Completed asset produced by R&D activities (for example, a software program released for sale)

collaborative arrangement. A contractual arrangement that involves a joint operating activity. These arrangements involve two (or more) parties that meet both of the following requirements:

a. They are active participants in the activity.
b. They are exposed to significant risks and rewards dependent on the commercial success of the activity. (Financial Accounting Standards Board [FASB] *Accounting Standards Codification* [ASC] glossary)

conditional cash flows. For purposes of this guide, conditional cash flows are defined as cash flows that are based on the condition of commercial success of the IPR&D project being valued and would need to be adjusted for the probability of success or weighted with downside cash flows that reflect potential development failure.

decision tree analysis. An enhanced income-based method that explicitly captures the expected benefits, costs, and probabilities of contingent outcomes at future decision points, or nodes.

developed product technology. Technology as it exists in a current product(s) offering. Today's developed product technology may be tomorrow's enabling technology.

discount rate adjustment technique. A present value technique that uses a risk-adjusted discount rate and contractual, promised, or most likely cash flows. (FASB ASC glossary) Also sometimes referred to as a *traditional* technique.

economic goodwill. For purposes of this guide, *economic goodwill* is defined as the residual goodwill that would result from subtracting fair value of assets and liabilities from the fair value of the acquired entity as opposed to from the purchase price.

enabling technology. For purposes of this guide, enabling technology is defined as the underlying technology that has value through its continued use or reuse across many products or product families (product family represents many generations of a singular product). Effectively, *enabling technology* represents shared technology with multiple uses across many products or product families.

expected cash flow. The probability-weighted average (that is, mean of the distribution) of possible future cash flows. (FASB ASC glossary)

expected present value technique. The expected present value technique uses as a starting point a set of cash flows that represents the probability-weighted average of all possible future cash flows (that is, the expected cash flows). The resulting estimate is identical to expected

value, which, in statistical terms, is the weighted average of a discrete random variable's possible values with the respective probabilities as the weights. Because all possible cash flows are probability-weighted, the resulting expected cash flow is not conditional upon the occurrence of any specified event (unlike the cash flows used in the discount rate adjustment technique). This technique is also referred to as an *expected cash flow* technique. (FASB ASC 820-10-55-13)

free cash flow. A measure of financial performance calculated as operating cash flows (net income plus amortization and depreciation) minus capital expenditures and dividends.

future R&D (or **future technology**). R&D that will be undertaken in the future.

in-process R&D (IPR&D) asset. Intangible asset that is to be used or used in R&D activities, including a specific IPR&D project. In other words, an IPR&D project is an example of an IPR&D asset. However, in some cases, an IPR&D project may comprise several IPR&D assets.

IPR&D project. R&D project that has not yet been completed. IPR&D project is an example of an IPR&D asset (which is also defined in this glossary).

indefinite-lived IPR&D asset. Intangible asset acquired in a business combination that is to be used in R&D activities.

multiperiod excess earnings method. A specific application of the discounted cash flow method, which is more broadly a form of the income approach. The most common method used to estimate the fair value of an intangible asset.

outlicensing arrangement. For purposes of this guide, outlicensing arrangement is defined as an arrangement in which a transferor, such as a pharmaceutical company, transfers (outlicenses) its rights to a previously identified and measured IPR&D asset to a third party (transferee). The intangible asset transferred is commonly known as the *outlicensed asset*. It should be noted that there are other types of outlicensing arrangements that involve internally developed IPR&D assets; however, these arrangements are not addressed in this guide.

prospective financial information (PFI). Financial information based on assumptions about events that may occur in the future and on possible actions by an entity.

relief from royalty method. A valuation method used to value certain intangible assets (for example, trademarks and trade names) based on the premise that the only value that a purchaser of the assets receives is the exemption from paying a royalty for its use. Application of this method usually involves estimating the fair market value of an intangible asset by quantifying the present value of the stream of market-derived royalty payments that the owner of the intangible asset is exempted from or "relieved" from paying. (Statement on Standards for Valuation Services No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* [AICPA, *Professional Standards*])

synergies. In the context of developing prospective financial information, the difference between the assumptions used to estimate cash flows that are unique to an entity and the assumptions that would be used by market participants.

technology migration. For purposes of this guide, technology migration is defined as the technology that is used or reused within a product or product family. In other words, technology migration represents reuse of "old" technology in combination with "new" IPR&D technology or "new" future yet-to-be-defined technology. Therefore, the concept of technology migration is that technology is reused from one product generation to the next product generation.

valuation specialist. An individual recognized as possessing the abilities, skills, and experience to perform valuations. A valuation specialist may be external or internal. When referring to the valuation specialist in this guide, it is commonly presumed that it is an external third party but, if management has appropriate credentials and experience, they can also serve in the capacity of a valuation specialist.